DOCUMENT RESUME

ED 251 332 SO 015 908

AUTHOR Verduin-Muller, Henriette, Ed.
TITLE G. ED. Paper-Book 1974-1984. The Process of Growth of an Innovation.
INSTITUTION Utrecht State Univ., The Netherlands.
PUB DATE 84
NOTE 316p.; Chapter 4 is presented in German. Chapter 10 contains small print that may not reproduce clearly.
PUB TYPE Collected Works - General (020) -- Speeches/Conference Papers (150)

EDRS PRICE MF01/PC13 Plus Postage.
DESCRIPTORS Comparative Education; Computer Assisted Instruction; Developing Nations; *Educational Innovation; Educational Research; Elementary Secondary Education; Foreign Countries; *Geography Instruction; Graduate Study; Higher Education; Human Geography; Information Dissemination; *Information Processing; Information Systems; Lifelong Learning; Models; Physical Geography; Program Descriptions; Relevance (Education); Social Science Research; *Student Research
IDENTIFIERS *Netherlands; Third World

ABSTRACT

Fifteen papers presented at conferences throughout Europe and in the USSR, Nigeria, Japan, Jamaica, and Tunesia provide an introduction to the research work being done by the graduate level Department of Geography for Education (G.ED.) at the University of Utrecht in the Netherlands. An introductory chapter describes the three G.ED. modules, which are (1) courses in developing theories and methods of planning, processing, and designing geographic information; (2) the study of modern trends in human geography; and (3) excursions to West and East European regions to study human or physical geography. Titles of conference papers are: "Theses on Designing and Dissemination of Geographical Knowledge," "A Conceptual Model for Processing Geographical Information for Education," "The Geographical Information Educationist, the Why, What and Who of a New Profession," "Das Partizipations-Projekt Randstad-2, entwickelt am Utrechter Curriculum-Modell," "Experiences with a Conceptual Curriculum Model for Geography, From Thesis to System," "From 'Glaciers to the Alps' to 'Glaciers and Tourism in the Alps,' a Report on an Adaptation of a West-German Multi-Media Package for the School-Curriculum in the Netherlands," "Spatial Sciences and Informal Education," "Computer Assistant Learning in Geographical Education in the Netherlands: Initial Steps on Virgin Soil," "About the Identity of Informational Geography for Formal, Non-Formal and Informal Educational Purposes," "Broadening Geographical Education: On Informing People about Geographical Knowledge," "Information Theory and Geography Education," "The Role of Educational Philosophies in Geographical Information Design," "Participation in Information Processing in Geography Education," "Providing Information on Third World Countries for the Informal Field of Education: New Opportunities for Regional Geography," and "Teleblackboard." (RM)

ED251332

U.S. DEPARTMENT OF EDUCATION
NATIONAL INSTITUTE OF EDUCATION
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

X Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official NIE position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Henriette Verduin-Muller

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

G.ED. PAPER BOOK, 1974-1984

(GEOGRAPHY FOR EDUCATION TEN YEARS OF AGE)

THE PROCESS OF GROWTH OF AN INNOVATION

HENRIËTTE VERDUIN-MULLER (ED.)

GEOGRAPHY FOR EDUCATION, GEOGRAPHICAL INSTITUTE,
UNIVERSITY OF UTRECHT,
UTRECHT, THE NETHERLANDS

Foreword

The organizing themes of geography, together with the concepts, skills and facts associated with them, form a powerful framework within which to view, understand and deal with issues confronting people living in a modern, complex society. Yet this scientifical geography information is of little use to people in their daily lives.

Over the last ten years Dr. Henriëtte Verduin-Muller and her colleagues at Rijksuniversiteit Utrecht have been working to develop theory and methods for planning, processing and designing geographic information for education. They have positioned themselves between the producers of scientific geographical output and their potential consumers of information.

The Utrecht definition of potential consumers certainly includes the traditional student in the classroom. However they have extended the definition to include people engaged in life-long education. These are people interested in active and effective participation in their communities, nations and the world.

Central to efforts at Utrecht has been the development of a conceptual model for planning, processing and designing geographical information for educational purposes. The model has been tested and modified through nearly 65 projects conducted by staff and students.

The Utrecht model is designed to be transferable to other settings. It should be used by anyone who, like Dr. Verduin-Muller and her colleagues, recognizes the need to include geographical information in the life-long education of effective and responsible participants in a post-industrial society.

Alan L. Backler
Social Studies Development Center Indiana University
Bloomington, Indiana, USA

G.ED.-PAPER BOOK (Ed. Henriëtte Verduin-Muller)

Geography for Education ten years of age (1974 - 1984).
The process of growth of an innovation.

Content		number of pages
	Introduction:	
I	The Why, and What of the G.ED.Paperbook and the How of its use	7
II	'Geography for Education', the set up of the study. (incl. a survey of the projects, executed between 1974 - 1984) In: De geïnformeerde mens (The informed person), inaugural address Utrecht University, Amsterdam, The Netherlands, Meulenhoff Ed. 1984, p. 26 - 29. Henriëtte Verduin-Muller.	6
	The Papers:	
1.	Theses on designing and dissemination of geograhical knowledge. Paper, the Commission on Geographical Education, 23rd. Congress International Geographical Union (IGU), Moscow, USSR., July/August 1976 Henriëtte Verduin-Muller.	4
2.	A conceptual model for processing geographical information for education. Paper, Symposium, the Commission on Geographical Education of IGU, London, UK., January 1978 In: Geographical Education: Curriculum problems in certain European Countries with special reference to the 16 - 19 age group, N.J. Graves (Ed.), London, U.K., University of London Institute of Education, 1978 p.6-41.	63
	Version in the German Language Konzeptionsmodell für die Curriculumplanung in der Geographie und Realisation geographischer Informationseinheiten. In: Curriculumarbeit in Europäischen Staten, Der Erdkundeunterricht, Heft 37, R. Geipel und H. Schrettenbrunner (Hrg.), Stuttgart, Klett, 1981, S.37-58.	
	Version in Bahasa Indonesia Model konsepsuil untuk prosesing informasi geografis untuk pendidikan. Jurusan Pendidikan Geografi FKIS-IKIP, Bandung, Indonesia, juni 1978	
	Henriëtte Verduin-Muller, Rob van der Vaart, Hein Hoitink, Godelief Verschuren, Jan Franke.	
3.	The geographical information educationist, the why, what and who of a new profession. Paper, Commission on Geographical Education, Regional Conference IGU, Ibadan, Nigeria, August 1978 Henriëtte Verduin-Muller, Rob van der Vaart.	19

4. Das Partizipations-Projekt Randstad-2, entwickelt am Utrechter Curriculum-Modell. Paper, 17. Deutscher Schulgeographentag Bremen, Bundesrepublik, Juni 1980.
In: Bremer Beiträge zur Geographie und Raumplanung, G. Feller und W. Taubmann, (Hrg.), Bremen, Universität Bremen, 1982, S.296-311. 16
Henriëtte Verduin-Muller.

5. Experiences with a conceptual curriculum model for geography, from thesis to system. Paper, Commission on Geographical Education, 24th. IGU Congress, Tsubuka, Japan, September 1980, 42 pages. (incl. the appendixes) 24
Henriëtte Verduin-Muller, Rob van der Vaart.

6. From 'Glaciers in the Alps' to 'Glaciers and Tourism in the Alps', a report on an adaptation of a West-German multimedia package for the school-curriculum in the Netherlands. Paper, International Council for Educational Media (ICEM), Helsinki, Finland, October 1980. 12
In: Educational Media International, 1980, no. 4, p. 16 - 23.
Henriëtte Verduin-Muller.

7. Spatial sciences and informal education (Ruimtelijke wetenschappen en voorlichting). In: Stedebouw en Volkshuivesting, 62nd. Vol., 1981, p. 111 - 117. 15
Hein Hoitink.

8. Computer assistant learning in geographical education in the Netherlands: initial steps on virgin soil. Paper, Symposium, the Commission on Geographical Education of IGU, London, UK, University of London Institute of Education, April 1983. 14
Jan van Beckum.

9. About the identity of informational geography for formal, non-formal and informal educational purposes. Paper, Annual conference of the National Council for Geographic Education (NCGE), Ocho Rios, Jamaica W-I, October 1983. 9
Edited on microfiche by ERIC Clearinghouse for Social Studies and Social Science Education, Boulder, Colorado, U.S.A., 1984.
Henriëtte Verduin-Muller.

10. Broadening Geographical Education. On informing people about geographical knowledge.
In: Research and research methods in Geographical Education. N.J. Graves (Ed.), Work undertaken by the Commission on Geographical Education of IGU 1980-1984 and presented to the 25th. IGU Congress, Paris, France, August 1984, p. 143 - 165. 12
Henriëtte Verduin-Muller.

11. Information theory and geography education. Paper, the Commission on Geographical Education, Symposium on occasion of 25th. IGU Congress, Freiburg i. Br., Federal Republic, August 1984. 21
Henriëtte Verduin-Muller.

12. The role of educational philosophies in geographical information design. Paper, the Commission on Geographical Education, Symposium on occasion of the 25th. IGU Congress, Freiburg i. Br., Federal Republic, August 1984. 8
Rob van der Vaart.

13. Participation in information processing in geography education. Paper, the Commission on Geographical Education, Symposium on occasion of 25th. IGU Congress, Freiburg i. Br., Federal Republic, August 1984. 12
Frances Slater.

14. Providing information on Third World countries for the informal field of education: new opportunities for regional geography. Paper, the Commission on Geographical Education, Symposium on occasion of 25th. IGU Congress, Freiburg i. Br., Federal Republic, August 1984. 15
Paul van den Boorn.

15. Teleblackboard. Paper, International Conference of the "International Council for Educational Media" (ICEM), Tunis, Tunesia, May 1972. 6
In: The annual report of the Delft University of Technology, 1972.
As "The educational implications of the Electronic blackboard" also presented at the European Conference on Electrotechnics, Eurocon'74, Amsterdam, The Netherlands, April 1974. Conference Digest, C.6-6.
Henriëtte Verduin-Muller.

THE WHY, AND WHAT OF THE G.ED. PAPERBOOK AND THE HOW OF ITS USE

Contents

The Why of the G.ED. Paperbook,	I - 1
The What of the G.ED. Paperbook,	I - 2
The How of its use,	I - 3
A final word,	I - 7

Henriëtte Verduin-MUller

Dep.Geography for Education
State University, Utrecht
Utrecht, The Netherlands

THE WHY AND WHAT OF THE G.ED.PAPER BOOK AND THE HOW OF ITS USE

The Why

The Geography's Education Paper Book should be seen and appreciated as a visiting-card or, more to the point, a business-card. The purpose of a business-card is to show the name of the business, its function and address and the person in charge. All this is to be found in the Paper Book. However, there is more. The reader also will be introduced to the way the business was conceived, came into existence, began from nothing, underwent growth and showed the first signs of maturity.

Normally people are confronted with a particular state of affairs as a starting point for further work. At best an overview of the past is given, this is often an overwhelming situation for a newcomer. This is what the G.ED. staff experienced in building up working contacts world-wide and when doing learning research with the graduate students of the Department of Geography for Education. Therefore making the growth visible, and by that making manifest the difficulties experienced, and showing the gradual forward progress of scientific research, we hope to offer the interested person a solid framework for their own research and further application.

The 10th anniversary of Geography for Education seemed an appropriate moment to publish, in book form, a majority of the papers concerning research output presented since 1974.

The idea to do so came up rather recently and certainly could not have been foreseen in 1973 when Geography for Education got the Faculty's green light; or in 1974 when the real work began. Thus it will be clear that the papers published here were never conceived or written from the point of view of showing the genesis of the research done in the field of Geography for Education. Although the papers in chronological order might given that illusion, in fact they are fragments of the development. It will also be apparent that the reader will not be introduced to the history of the Department, let alone its 'petite histoire'. Nevertheless, the contributors hope that this collection of papers will meet the aims mentioned above.

Nearly all papers were originally written in English. The main reason is that from the very beginning contact and cooperation has been sought with colleagues, particularly in other countries. First of all we had the feeling that we were entering a new research field of international importance and

second the Netherlands, being a small country could give us only a limited feed back, (although the discipline as such reaches a rather high standard in geography education, as well as in applied research). A third point was that Dutch students do master foreign languages, at least at a passive level.

The What

On May 28th 1973 the Interfaculty for Geography and Prehistory of the State University of Utrecht took the decision to establish a graduate study for information provision for education purposes (formal, non-formal and informal) from the viewpoint of Geography.

The decision for this applied study was founded on a report of a select faculty committee studying the developments to be expected in education, in its widest sence, in the coming information society and the ways in which the discipline of Geography could adapt to them.

The demographic shift was also considered in the report; 1964 and the years following being also a turning point in the Netherlands. The traditional high birth rate began to decrease. Already, as a consequence of the expected decreasing numbers of school-age children, there would be fewer teachers needed for formal education in the near future. New spheres of work could be envisaged in the then (1973) still scarcely profiled and partly unknown jobs within the field of information and communication.

Rightly the initiative originated with the discipline. Modern geography with its explanatory character could contribute to relevant and qualitatively high information contents. It will be the academic geographer with a knowledge of and training in planning and designing educational geographic information to fulfil this task, a new high standard profession indeed.

Because this view is rather new, we stress the fact that planning and designing such information should be seen as an activity standing on its own feet and essentially different from working with the information in actual educational communication situations such as schoolclasses, adult group work, or processing information in informal education situations. Let us not forget that education is also an information business and not only one of communication.

The ideal situation is one in which both activities, the provision of information and the communication, naturally follow each other. This does not mean however, that both activities are necessarily undertaken by the same person. Most of the time this will not be the case, both actions need specific professional qualifications.
So the heart of the work to be done was the study of the procedure, process and realizing of geographic information to function for all types of education. The struggle for theory and method of planning and designing of geographic information in a broad sense forms the "what" of the papers in the Paper Book.
Of course not all time could be spent on the research work. The reader must not forget that Geography for Education, a graduate Department, had to be run. Each year between twenty and thirty students entered the G.ED.program. And how difficult it is at the same time to get away from the zero-point might follow from the fact that in the first nine years, 1974-1982, only seven papers (No. 1-7) were presented whereas the next seven (8-14) took only two years, 1983-1984. The harvest of those early, difficult, years is now being reaped.
In the Paper Book the papers are published in their original fashion. The irregularity of the papers in form and typing is striking. Over a period of ten years the layout and style of the papers also changes and technological developments brought us from the manual to the electric typewriter and thence to the highly sophisticated wordprocessor.

The How of its use

The reader is invited to consider the contents of the papers carefully. For the researcher(s) doing research means stepping forward very gradually and carefully, rethinking and discussing all the findings. The researcher, though, is fully aware of the inherent uncertainties.
The reader not having a direct participation in the research, and by that not having access to all the background deliberations, misses the grey tones of the development and is more apt to take a black and white position in response to what can be read in the papers.
Although all the papers show a strong coherence, for the readers sake, we have indentified four categories.

Papers No. 1, 2, 3, 4, 5, 9, 10, 11

From the very beginning it was clear that as soon as possible a kind of a working scheme for planning and designing geographic information for education had to be formulated. Such a scheme should give enough freedom to the variety of geography topics and the media applications as well as the different types of education (formal, non-formal and informal). Moreover information geographers, as the doers, differ in creativity. So the scheme in itself had to be tightly constructed, yet manageable and with necessary intellectual working space. Rather early we arrived at a scheme, which by its characteristics could be called a model, the so-called G.ED. model. Reading the relevant papers it seems as if the model held on to its first form. Only one element, the first one, changed over time, namely from "objectives" to "programme of requirements". The reader is invited to think over the consequences for the further functioning of the model. In fact it meant the step from curriculum orientation to real information processing, an essential change though. In the course of time when practizing the model it gradually could be seen an a system. The different elements, as subsystems, and the relationship between them got considerably deeper. In general it can be said that the model is experienced as a very handy instrument and easy going when geographic information has to be made.

It might be good advice to read paper no. 9 first. It is characterized by a synthetic and summarizing view on the information process. Then the reader could go back to no. 1 and the following papers. At the same time, the progress made between 1 and 9 will become apparent. In no. 1 the theses are formulated; in no.2 and 3 the model is described; whereas in no. 4 a full application is given; the experiences with the model are discussed in no. 5 and 10 and in no. 11 a begin is made with a theory for planning and designing information for geographic education. It must be taken into account that the trends in societal development, namely the definite growth towards an information society with all the exponents in literature and media-publications, favoured the Department's work.

The reader will notice that in the papers under consideration some overlaps occur especially on the definition of the function of geography for education. This is so because the audiences were rarely the same, and the papers have been given in different countries and institutions, where the definition of geography for education may, and often will be different. Moreover a strong formulation was fundamental, because within the definition, being very disciplinary, the vision of the function of geographic information found its roots.

Paper No. 6 and 7

In both these papers the model as developed up to that time is functioning. The model itself remains completely in the background, in its essence it is used to adapt education geographic information of foreign, i.e. German origin, for use in Dutch schools (paper 6) and stress the need for planning and designing precisely geographic information for citizen counseling (no.7). In the last paper moreover, attention is paid to the function of geographic information in the different phases of the preparation of regional planning.

Papers No. 11, 12, 13 and 14

These four papers were presented at the symposion of the Commission on Geographical Education of the International Geographical Union, Freiburg i.BR., Federal Republic, August 1984. They all show to a certain degree the maturity of the geographic information planning and designing process. The theme of the second day of the symposion "The development of educational geographic information for printed, non-printed and electronic media and their evaluation" was the stimulus for these particular contributions. In reading the papers it will become quite clear that the authors handle their subject matter in a masterful and realistic way. (See for paper no.11 p.I-4.) In paper no. 12 the education philosophical framework is high-lighted when designing geographic information; A plea for participation in information processing in formal geography education is stressed in an enterprising way in paper no 13, the benefit for the learning process is argued; and in no. 14 the function of regional geography as a source in planning and designing geographic information on Third World countries is explicitly considered, at the same time in the paper the study of regional geography (in its new significance) is therefore advocated. The principle of the underlying question of mutual interrelations is stated here, a measure of the reciprocity of Geography for Education and the discipline of Geography.

Papers No. 8 and 15

Both papers have in common reference to new technological developments and the question of geographic information (8), and information as such for (formal) education (15).

Paper no. 8, was written in the first months of 1983, and reflects on the use of the computer in geography education thus keeping up with trends of the information society. The creation of educational geographic software is argued.

Paper 15 seems like a strange bedfellow. This is certainly true concerning the chronology. It has already been given in 1972, but it is very up-to-date if we take into account the attention to planning and designing information for a then very advanced electronic mass-medium, the tele-blackboard or electronic blackboard.

The electronic blackboard as a system was developed by members of Delft University of Technology in close cooperation with and at the instigation of members of Bandung Institute of Technology in Indonesia to give a technical response to the demand of more and better education in the Indonesian archipelago. The electronic blackboard turned out to be a very practical communication means, now, in 1984, it is in use at several places in the Netherlands. The information design possibilities are principally still the same, although technically considerably more sophisticated than in 1972.

The insertion of this 'avant-la lettre' paper in the Paper Book can be supported, now that parallel communication means, such as information transfer by satelite are becoming quite normal, and thus there will be a need for easy and cheap methods to create nonetheless high quality programs for all types of education.

In fact the research done for this paper together with earlier research (a.o. dissertation work 1964) were the key-stones for the ideas on planning and designing of information as such.

It is not easy to give the user of the Paper Book advice on the best order of reading the papers. Reading reasons might be just totally different. At one extreme the papers would be read as an introduction to the research work done by the Department of Geography for Education and at the other as a preparation for doing ones own research. However, taking the papers as sources of information we could advise combined reading of some of the papers: no. 9+1; 1+2+5; 2+4; 7+4; 10+11; 5+10; 11+12+14; 3+15; 6, 8, 13 and also 9 and 12 have clear overall relationship with the other papers.

A final word

Answering the why and what te questions of the Paper Book and the how of its use was a rather complex task, because all questions have in themselves aspects of the others. Nevertheless we hope to have given the reader some assitance when studying the papers.

'GEOGRAPHY FOR EDUCATION', THE SET UP OF THE STUDY

Contents

The line of the study in general,	II - 1
The principal subject,	II - 1
Subsidary subjects,	II - 2
Note,	II - 3
A survey of the projects executed between 1974-1984,	II - 4
Note,	II - 6

Henriëtte Verduin-Muller

Dep.Geography for Education
State University, Utrecht
Utrecht, The Netherlands

'GEOGRAPHY FOR EDUCATION', THE SET UP OF THE STUDY

The line of the study in general

The study Geography for Education, a graduate study by nature, takes two years and is based on a candidate examination in Human Geography. It consists of a principal subject and two subsidary subjects.
(At the beginning of an academic study of Geography, at least in the Netherlands, students have to make their choice between physical geography and human geography. However students also have to study modules concerning, respectively, human or physical geography, during their academic study period).

The principal subject

The contents of the principal subject comprises three study modules, as well as learning research and a thesis.

The three modules being:

- an orientation on the information society and its implications for education and is followed by a course on theory and methods of planning, designing and creating geography information for education purposes.
- the study of modern trends in human geography.
- broadening and deepening of geographical knowledge, including two one-day excursions, a twelve days' excursion alternately to West and East European regions. All excursions lay a stress on informational geography starting points.

The learning research and the thesis

Within the scope of these modules learning research is excuted, preferably by four students per project. In a personal thesis an aspect is worked out in detail.
The learning research project covers an excercise in the information geographical planning and designing process for education (formal, non-formal or informal). Scientific geography publications and other secondary

materials are used as sources. First hand observations are also used as sources especially for projects within the Netherlands. The Faculty research budget made it possible even to acquire first hand experience for some projects in Europe (Berlin, Vienna-Budapest, Bern, Brussels). Each learning research project is framed into a project group, in which besides the students and the guiding staff member of Geography for Education, a staff member of the Geographical Institute also participates, being an expert on the subject matter covered by the projects.
The output of the learning research has a content and form that can be used in practice. No wonder that some output in particular is very much in demand.
Learning research topics are chosen in cooperation with or on request of a great variety of societal institutions, such as provincial and town council boards/administrations, Third World information institutes, Bank information services for regions around the world, Tourism services, Land consolidation, Dutch Society for Industry and Commerce, Geography examination boards, adult education institutions concerning man/society information, Dutch Institute for Audio-visual Media (NIAM), Dutch Educational Television (NOT). The reader will find a complete abstract of projects executed between 1974 and 1984 at the end of this section of the Paper Book.
For students it is of course very attractive if their learning research projects result in 'something' that can and will indeed be used. Therefore there is always an imminent danger of over concern for the product. The development process however, is under control by a step by step procedure. Each research meeting and methodological step is controlled by a protocol and at the end followed by an evaluation report on the totality of the process. Often the official total study time of two years is exceeded, because students like to invest much time in their learning research. On the other hand experience has taught us that when applying for jobs it is the especially output of the learning research project that is most important (often in combination with the trainee period, see under subsidiary subjects).

Subsidary subjects

Subsidary subjects in the first place aim to support the main study in different ways. Within the G.ED.-study there is a ten months' period for the subsidary subjects - one 6 months' period (ocassionally two of

three months), this subject is totally or partly geographical or near to geography and often in support of the learning research topic, and an obligatory four months subject in the agogic or communication sciences. This four months' subject consists partly of theory, partly of a trainee period (including a report).
If the student has chosen to train for formal education the four month subsidary subject is provided by the Pedagogic Didactic Institute of Utrecht University (the Institute for Teacher Training). For non-formal and informal education there exists a form of cooperation with, respectively, the Utrecht university's institutes of Pedagogic and Andragogic sciences and Mass Communication and Public Relations. During the trainee period students work as much as possible with the output of or along lines of their learning research.
Some students take their subsidary subjects at the University of Florida, Gainesville, Florida, USA. Utrecht university has an affiliation agreement with the University of Florida. For a Dutch student this is a rather difficult but very instructive way of terminating the academic study.

Note

Consequently the financial problems of the universities combined with changing ideas about the function of academic education (into higher education) an academic study in the Netherlands since 1983 takes four instead of five years.
So from 1985 onwards the graduate students in the G.ED. Department only have 1 year and 8 months for the main and subsidary subjects mentioned above. Besides some minor changes the solution of the time gap is found in lowering the time period for subsidary subjects.

A SURVEY OF THE PROJECTS EXECUTED BY THE DEPARTMENT 'GEOGRAPHY FOR EDUCATION', BETWEEN 1974-1984.

The projects are mentioned by code and by name; the years covered and the type of education are also given; staff projects are included in the list.

1. 'On European Population', demographic developments; 1974-1978; education in general. Version in Dutch and in English.

2. 'Landconsolidation in the River District'; 1974-1978; education in general. Version in Dutch and in English.

3. 'Mekong-Valley-Project'; 1974-1976; informal education.

4. 'On theory and method of planning and designing geography information; 1974-1984. Versions in English.

5. 'The Third World and the Western World'; 1975-1976; informal education.

6. 'Maghreb-Project', the social-economic background of the migrant worker; 1977-1978; non-formal education.

7. 'Luxemburg', excursion guide for academic geography students. 1976-1977; non-formal education.

8. 'Vlaardingen', citizen counseling; 1975-1976; informal education
'Participation-Project-Randstad I'; 1976-1977; informal education. Partly in English and in German
'Participation-Project-Randstad II'; 1977-1980; formal education.

9. '200-Years labour market in Utrecht', 1778-1978; formal education. Partly in English.

10. 'The Eindhoven Agglomeration'; 1977-1978; formal education.

11. 'Haaften', living in a village; 1977-1978; formal education.

12. 'Housing problems in Utrecht-town; 1978-1980; formal education.

13. 'Leerkop' physical Planning simulation in the Vijfherenlanden; 1978-1979; formal education.

14. 'The Green Revolution', a simulation; 1979-1980; non-formal and informal education.

15. 'Gorinchem', local studies project; 1980-1982. formal education.

16. 'Moscow, a socialistic city?'; 1979-1980; formal education.

17. 'Tourism and Third World Countries'; 1979-1980; formal education.

18. 'Housing problems of migrant workers'; Utrecht-town, 1979-1980; formal education.

19. Historical perspectives of geography for education, literature research; 1979-1980. Version in English.

20. 'Citizen counseling, southern part of the old town of Utrecht'; 1979-1980: informal education.

21. 'Contrasting views of agriculture'; 1979-1980; non-formal education.

22. Inventarisation of Geographical Information in the Dutch language on Third World countries; 1980-1981.

23. 'A close look at a landscape', the south-eastern part of the province of Utrecht; 1979-1980; formal education.

24. 'Northsea Oil'; 1979-1980; education in general.

25. 'Berlin, two city centres, two worlds'; 1980-1981; non-formal and informal education.

26. 'Agriculture in the Third World: The Sahel Countries'; 1980-1982; non-formal education.

27. 'Increasing use of space per person' (Utrecht-town); 1980-1981; education in general.

28. 'The development of the boundaries of the European States'; 1980-1982; formal education.

29. 'De Krimpenerwaard, citizen participation in regional planning'; 1980-1981; informal education.

30. 'Glaciers and Tourism in the Alps'; 1979-1980; formal education.

31. 'Inner city development, London'; 1980-1981; formal education.

32. 'Information for citizen counseling, Utrecht-town'; 1980-1982; informal education.

33. 'TWIN-II' (Teleblackboard Working Group Indonesia-The Netherlands), developing teleblackboard information for education purposes, Utrecht-Bandung,; 1976-1978.

34. 'Vienna-Budapest, a comparison of urban structures', 1981-1983; informal education.

35. Information and democratisation, 1981, informal education.

36. 'Physical planning course for inhabitants of the regio Alblasser waard/Vijfherenlanden'; 1981-1983, informal education.

37. 'Twente', intra-regional cooperation; 1981-1982; formal education.

38. 'The Dutch Shallow region'; 1981-1982, formal education.

39. 'The migration of the Dutch textile industry to Tunesia', a simulation; 1981-1982; non-formal/informal education.

40. 'Posjeskade-quarter', its history (Amsterdam); 1981-1982; non-formal/informal education.

41. 'The system-approach of the city'; 1981-1983. formal education.

42. 'Comparing two cultures: Dutch and Moroccan, focusing on food'; 1981-1983; formal education.

43. 'Guided by the map'; 1981-1983, non-formal education.

44. 'The hearty healthy village', a counseling project in the province of South Holland, The amenity of small kernels; 1981-1983; informal education.

45. 'Bern, inside out', cultural tourism; 1982-1984, informal education.

46. 'Noord-Brabant', physical planning problems of a province; 1983-1984; formal/non-formal education.

47. 'Centre-periphery simulations on the Third World"; 1983-1984; education in general.

48. 'South Africa, and the Netherlands, cross cultural comparison of living conditions'; 1983-1984; education in general.

49. 'Stranger in ones own country', Southern Africa, The Homelands; 1983-1984; education in general.

50. 'Utrecht, city and country-side'; 1982-1983; informal education.

51. 'Waterways in Europe'; 1983-1984; informal education.

52. 'Brussels', geographic excursion guide; 1982- ; non-formal education.

53. 'Spatial aspects of scenario's for the future of Dutch energy'; 1982-1984; formal education and non-formal education.

54. 'Randstad', geographical analysis; 1983-1984; formal education.

55/62 These projects started in 1983 and are still in operation.

63. 'Living in Maarsenbroek, living in a newly built section', a project on women; 1982-1983; informal education.

Note

Project output such as books, brochures, slide-series, tape-slide series, video tapes, games, exhibitions (in photocopies) as well as descriptions of the designing process are present in single copies in the library of the Geographical Institute (however, mostly only Dutch).
Also the related theses originating in the project's geography content or the research method are available for consultation in the Library of the Institute.

THE PAPERS

Note

From the papers the reader might notice over the years a change of the Departments' name. Indeed, when the Department was established in 1973, it was called: 'The Department of Human Geography for Education and Information-transfer'. However, in autumn 1978, the name was changed into a less confusing one: 'Geography for Education' (formal, non-formal and informal).

We would like to thank the following persons for their kind help with the translations/correction of most of the papers.

Mrs. H. Berendsen,
Wijk bij Duurstede, The Netherlands

Miss Drs. A. F. Boerema,
Arnhem, The Netherlands

Dr. M. Gramm, Technische Hochschule,
Aachen, Federal Republic

Prof. Dr. N. J. Graves, University of London Institute of Education,
London, UK.

Mr. W. E. Marsden, University of Liverpool Institute of Education,
Liverpool, UK.

Prof. Dr. A. W. VanderMeer, University of Alabama,
Tuscaloosa, ALABAMA, USA.

Mr. R. Tucker, Dutch Institute for Audio-Visual Media,
The Hague, The Netherlands

XXXIII International Geographical Congress
Moscow, USSR, July/August 1976

Section 10

Theses

ON DESIGNING AND DISSEMINATION OF GEOGRAPHICAL KNOWLEDGE

Geographical Institute,
State University Utrecht,
Utrecht, The Netherlands

Dr. Henriëtte Verduin-Muller

Geographical Institute, State University, Utrecht
Heidelberglaan 2, Utrecht, The Netherlands.

Dep. Human Geography for Education and Information-Transfer

Dr.Henriëtte Verduin-Muller.

International Geographical Union Congress, Moscow, July-August 1976, Section 10

Theses on designing and dissemination of geographical knowledge

Thesis 1

We take the point of view, supported by literature both implicitly and explicitly, that the objective of geography for education and information is that man see himself in his relation to his immediate and distant environment. This relationship changes continuously. In order to be able to determine his social and existential position, man must be able to orient himself in his environment and to acquire insight into the changes which take place in it.
On the one hand, man is part of an ordered environment; on the other hand, he causes changes in this environment by his own activities. Physical processes also cause changes independent of man. Thus a continuous reshaping occurs, either gradually or precipitately.
It is the task of geography for education and information to make man thoroughly familiar with the existing physical-spatial and social-spatial structures as well as the genesis of these structures and with the processes especially those concerning spatial behavior and behavior in space which influence them. As a consequence of the continuing spatial reordering man is constantly confronted during his lifetime with new relationships. The underlying aim is therefore that man can and dare venture independently to acquire insight into for him new spatial social relationships.

Thesis 2

In modern formal education, considered as a function of social developments, the teacher is more and more becoming a guide in the learning process instead of a disseminator of knowledge.
This has centain consequences for the educational and the didactic organization of school subjects. To initiate the desired learning process for geography we propose firstly, that geographic information must be made available in which the contents must have a discipline related structure (expository learning), and secondly, that the conceptual framework of the contents be made accessible (discovery learning). Authors of existing textbooks must take these changes in consideration.

There is a fast rising demand for geographical information for non-formal education and information. Organisations such as open universities and open schools are trying to satisfy these demands. The contents of this information must reflect a discipline related structure and access to the conceptual framework will be interwoven.

Thesis 3

Every teacher or informer, in order to be engaged in a meaningful way, must have a penetrating view of the cognitive and affective relations of the available information to the discipline. This insight is a condition for the unfold of specific didactic research.
Every geography teacher and informer is an information scientist with respect to his own discipline. In addition, his teaching or guidance of the learning process tends to be specific to certain age groups; for working with persons under 18 years of age a pedagogic didactic training is necessary,while for working with persons of 18 years and older an andragogic didactic training is necessary.

We borrowed the term "information scientist" from Patrick Meredith's article, Information Systems and Systematic Information in the Journal of Education Science, 1968, pp. 79, in which he writes:
"Since every educator, whether he knows it or not, is, by nature of his profession, an information scientist, we shall not begin to make headway with a science of education until these craftsmen begin to analyse the stuff with which they do their daily work".

Thesis 4

The process of designing, conceptualizing, making the concepts accessible and disseminating of geographical information, is one which we will define as informational geographical acting. This acting is an original process. We reject the frequently expressed opinion that this is a matter of the "translating" of discipline-problem areas. The originality lies in the designing and the conceptualization of the frame-work of the theme. Design and conceptual frame-work are related to the structure of the discipline, but are determined by the specific objective of the geography for education and information. Information for expository learning and for discovery learning can be developed only out of a conceptual framework, which is founded on objectives.

Thesis 5

In the process of informational geographical acting we can, as we learned from our research,distinguish several phases.

1. The incubation period - this is a phase of studying primary and secondary sources. The study is based on the stated objectives and in perspective of the objectives of geography for education and information. This phase, which should usually yield a working document, is an essential precondition for the conceptualization of the information contents.

2. The designing and the conceptualization stage - in this phase, which is, of course, also based on the objectives, the designing is done and the conceptual framework is constructed. This framework must, to a very high degree, be transparant because it is the basis for the next phase: viz. filling in the framework for expository learning and discovery learning. This phase, in regard to the final decision, is so interwoven with the conceptualization phase that we prefer to speak of it as a sub-phase.

3. The realization phase - this phase is one of working out the drafted contents as to means of expression and their designing and, in conjunction therewith, the choice of communication channels (colloquially speaking - aids). The estimated time (the space available in the curriculum in formal education) will influence the working out for the theme.

4. The evaluation phase - in this phase the results of all previous phases are determined. Thus a feedback is achieved whereby the previous phases can be re-adjusted. In testing the expository material as well as in the discovery learning outcomes especially in the subject of geography, the the incidental input of the testee, whether or not explained, must be taken into account.

The separate delineation of the phases is of course for heuristic purposes, in actual practise there is no such distinguished separation.

The phases identified through the research and analyses of the process of informational geographical acting seem formally correspond to some extent with the theory of curriculum reform. Further research will take place to delve into the phases of the incubation period in relation to the phase of conceptualization and the inherent structuring of expository and discovery learning. This work will be done along certain geographical themes. After we will have gained more insight into this crucial part of the process we will try further to relate our research findings to curriculum theory.

The Randstad example

As an illustration of our systematic and discipline-centred approach to the designing, conceptualization and disseminating geographical information, the Information and Documentation Centre for the Geography of the Netherlands, in cooperation with us, has conceptualized especially for this IGU-congress-section an exhibition of the Randstad. Before inviting you to observe and evaluate the exhibition I wish to present to you the rationale for the methodological aspects of the exhibition in terms of the informational geographical thought developed in these theses.

The Randstad Holland Exhibition, its methodological acknowledgement

Target group (entering behavior)	Non-dutch geographers, bearing some - mostly superficial - knowledge of the geography of the Netherlands
Objective	To provide insight into the use of space in the 'Randstad Holland'
Content	The Randstad Holland (the Green Heart Metropolis)
Specification of the content	The Randstad cities, the 'open space' between the cities; some surrounding areas undergoing the Randstad's direct influence
Specification of the objective	. to identify the Randstad as the most densely populated and economically most important part of the Netherlands . to identify forms of conflicting landuse in the Randstad and in the 'open space' . to compare the Randstad with urban concentration zones in other countries
Conceptual framework	site/situation structure → historical development (functions) structure → present structure (functions) ↓ processes → interweaving of different forms of ↓ landuse → leading to conflicting situations measures in the field of physical planning/ future developments
Media	non-projected means of expression (text, maps, photographs, diagrams) developed, and made resp. selected on the basis of its potential for implementing the stated objective
Display	an arrangement of the means of expression on the panels along the lines of the conceptualized framework with a notion of the aesthetical principles of material designing.

A co-production of:

- *The Information and Documentation Centre for the Geography of the Netherlands, Utrecht*
- *The Ministry of Education and Science, The Hague*
- *The Ministry of Foreign Affairs, The Hague*
- *The Department of Human Geography for Education and Information Transfer of the Geographical Institute of the State University, Utrecht*
- *The Department of Applied Geography of the Geographical Institute of the State University, Utrecht*

With assistance of:

- *The Drawing-, Photo-, and Reproduction Department of the Geographical Institute, Utrecht*
- *The Foundation Film and Science, Utrecht, for graphic design and mounting of visual material*

A CONCEPTUAL MODEL FOR PROCESSING GEOGRAPHICAL INFORMATION FOR EDUCATION

"Arthur and Judith Getis worked nearly full time from November, 1964 to June, 1965, on the first urban unit. They had no model to work from".

Nicholas Helburn in the "Final Report on the High School Geography Project", 1970, p.34.

Dr. Henriëtte Verduin-Muller

in cooperation with
Drs. Rob van der Vaart, Drs. Hein Hoitink,
Drs. Godelief Verschuren, Drs. Jan Franke

and doctoral students
of the Dept. of Human Geography
for Education and Information transfer.

Geographical Institute,
State University, Utrecht.©

January 1978

International Geographical Union

Commission no. 3: Geographical Education
Chairman: Dr. Norman J. Graves

This paper is concerned with problems of the geography curriculum. Within this broad spectrum the accent is on the planning of curriculum content and especially of geographic information units.

In order to achieve a satisfactory output for work in schools and other institutions or just 'to hand' (or disseminate via mass-media) to the ever growing group of people interested in geography, a conceptual model for processing geographical information is constructed and described. The model covers the field between the discipline as a source of geographical content and the finished product for geographical education.

In fact the determination of a conceptual model for processing geographical information would signify that a start has been made in developing a geographical information theory for education. The term information is here to be taken in the original significance of the word, namely 'content put in-formation', i.e. formed into highly structured content.

The model, which is presented in section 4 of this paper, has emerged from the research experiences of 10 projects. All these projects have been undertaken at the Geographical Institute of the Netherlands State University, Utrecht. The team engaged in this work is the staff of the Department of Human Geography for Education and Information Transfer, in cooperation with doctoral students in Human Geography, in so far as that is seen as relevant to education.

As an IGU-member and as an interested participant of the Commission on Geographical Education we would ask you to study and to try out the

conceptual model for the processing of geographical information for education.

If you are be able to help, we would be glad of your comments by December 1979. We than can study and compare them in discussion at the symposion of the Commission, preceding the 24th IGU-conference, Tokyo, 1980.

It would be useful if you would bring with you output in whatever form (from brochure to video-program) developed according to the pattern laid out in the model. If you need specific help, please contact us. We will happy to support you.

A CONCEPTUAL MODEL FOR PROCESSING GEOGRAPHICAL INFORMATION FOR EDUCATION.

CONTENTS

	page
(Foreword)	
1. On the objectives of and on the need for formal and liberal education	2- 1
2. On the aims of geographical education	2- 4
3. Geographical information units : a survey of the literature	
3.1. Introduction	2- 6
3.2. A survey of relevant literature	2- 7
3.3. Summary and evaluation	2-12
4. A conceptual model for processing geographical information for education	
4.1. Introduction	2-14
4.2. The conceptual model: diagrammatic description	2-14
4.3. The conceptual model: description	
4.3.1. Formulating the aims and roughly estimating the target-group	2-15
4.3.2. The phase of studying the geographical sources	2-16
4.3.3. The phase of the development of the "concepts"-structure	2-17
4.3.4. The phase of the designing of an information structure	2-19
4.3.5. The phase of realization	2-20
4.3.6. The phase of evaluation	2-21
5. A reflection on the conceptual processing curriculum model	2-22
6. An explanatory illustration of the different phases of the conceptual curriculum model from the projects	
6.1. Introduction	2-24
6.2. The phase of formulation of aims and the rough estimation of the target-group	
6.2.1. An introduction to the example	2-24
6.2.2. The illustration from the Participation Project Randstad-2	2-25

page

6.3. The phase of the study of sources
6.3.1. An introduction to the example 2-27
6.3.2. The main outlines of the table of contents of the working document of the Project "The Utrecht Labour Market over 200 years: 1778-1978" 2-28
6.4. The phases of designing the structure of the concepts and the information structure
6.4.1. An introduction to the example 2-29
6.4.2. The Eindhoven-Project: the structure of concepts, an overview of the global information structure and an example of the refined information structure 2-30
6.5. The phase of realization
6.5.1. An introduction to the example 2-34
6.5.2. A fragment of the output from the Project "The Utrecht Labour Market over 200 years: 1778-1978" 2-37
6.6. On the phase of the evaluation 2-42
7. "Conflicts in Land-use in Eastern South-Holland" (An example of a geographical information unit)
7.1. An introduction to the example 2-43
7.2. "Conflicts in Land-use in Eastern South-Holland" 2-44
8. A piece of history about the development of the processing model
8.1. Introduction 2-58
8.2. From the Moscow-theses (23th IGU Congress, 1976) 2-58
Notes 2-60

A CONCEPTUAL MODEL FOR PROCESSING GEOGRAPHICAL INFORMATION FOR EDUCATION

1. On the objectives of and on the need for formal and liberal education

The content and the form of education (formal and liberal) is a source of great interest throughout the world. And no wonder for if an humanistic emancipatory view of education is taken it provides people with the ability to function adequately in society. Whether people can maintain and fulfil themselves in social and economic life in accordance with their potential depends on a whole series of factors.

Reinforcing the literature on this theme we would argue that an intellectual and emotional grasp of a coherent unity of skills, knowledge, concepts, and attitudes, values and beliefs provides a prerequisite condition for adequate functioning in society.

Thus it is necessary for the discipline with which we are concerned i.e. geography or a cluster of human and social disciplines to develop the necessary instrumentation to fulfil these aims. To achieve these aims support must be sought from educational sciences e.g. curriculum-theory.

The need for educational information will now be sketched in broad terms. We do neglect the past. In our overall outlook we pay more attention to the present and the future. Similarly, because educational information in the western and non-western worlds differ so much, at least in relation to organisational structures, we need to make distinctions between the two worlds. First we will direct our attention to the western world, then the non-western. But this sequence does not represent any priority of importance.

The *western world* is growing in emphasis as a post-industrial service society. Among its characteristics are a great variety of types of work; an increase in leisure time; an increase in inter-regional contacts; internal democratization; and an emphasis on education as a means of 'learning to be' (title of a recent UNESCO report, 1972).

All these have distinct and formal consequences for education. In addition, education itself is undergoing a change in function and style, becoming more emancipatory, having outgrown both qualitatively and quantitatively traditional formal education to the age of 18.

Expository learning remains necessary for certain purposes, but is given less priority. Discovery learning, and the structuring of learning in curriculum units using information and documentation material, so essential for both social and mental development, is stimulated. Education is no longer confined to school and a particular age group. Social and economic change demand new types and forms of education. These may well allow the realization of educational aims outside the traditional day-school through, for example, second-chance education, life-long education or recurrent education.

Information is being disseminated to increasingly broad sections of the population in comparison with the past. As part of the democratization process, for example, the opportunity for all groups of people to participate in physical planning at different levels is a highly significant development. For this to be properly undertaken, a much broader education base in the lay population is required.

In the *non-western* world there are particular educational needs, such as the elimination of illiteracy and expansion of all types of continuing education. An extension of the influence of the formal institution, the school, seems to be wanted less and in some regions is not given precedence. In such areas, schools tend to become urban or suburban, compelling migration from rural areas. In practice, there is no re-migration after the completion of schooling. Thus more and more reliance has to be placed on local educational initiatives.

Educational information dissemination is of essential importance. This is especially true of innovative information, whose function it is to familiarise the population with changing situations, such as those connected with the execution of new physical projects. In addition to school, the peripatetic teacher and the information officer, the use of mass-media (education by radio in Thailand and many Latin American countries: education by satellite in India and West Africa) contributes to this task. An inadequately developed infra-structure makes more

necessary the use of mass-media and non-terrestrial bound communication channels such as satellites, at least for a start to be made in the solution of such educational dispersal problems.

In this light, we can say that in both these worlds the significance of the traditional role of teachers and information officers as purveyors of knowledge diminishes, and the more progressive function of creative companions of the learning process increases. This process is being helped by the provision of structured and theoretically underpinned curriculum units. If such 'companions' carry out their task in a proper way, they must be able to make explicit the cognitive and affective aims and objectives underlying their units. If necessary, they themselves must have the capability and courage to develop, realize *and* disseminate such units , preferably in cooperation with others. The 'new' teachers and information officers will, among other things be, in the words of Meredith, information scientists in relation to their disciplines.[1)] Thus the basic function of the teacher and information officer has to undergo a thorough transformation: a matter of explicit professionalization.

The conceptual underpinning for these educational activities provided by the disciplines is to be found in curriculum theory. So it will be necessary to develop a curriculum model as a basis for planning educational information in whatever the subject as such. And since we are concerned with the discipline of geography we undertake the development of the model with that discipline in mind.

Thus the educator no longer is a person stuffed with a lot of subject knowledge, dispensing it via a number of didactic devices for the edification of pupils and clients. During his training, he must remain acquainted with his discipline at a high academic level and also become knowledgeable about relevant aspects of curriculum theory. It goes without saying that in addition the education of teachers and information officers in training institutions and universities needs to be adjusted or brought into harmony with these developments.

2. On the aims of geographical education

The aims of geography as a school subject until recently were a typically nationalistic or even chauvinistic concern. From country to country statements of aims could differ considerably. If the aims were not made explicit, as was the situation in most cases, they could be deduced from the nature of the curriculum and from the curriculum content, as might be found in geographical textbooks.

It can be argued that the nature and practise of the university discipline of geography were leading influences on school geography. Until well into the sixties, school geography was largely made up of a painstaking description of countries and their regions, that is, a regional geography framework. Within regional geography, different countries set their own accents: in Germany, often a romantic view of landscape; in the United Kingdom, an emphasis on local field work; and in the U.S.A. on gaining insights into the diversity and unity of a vast country. In Dutch geographical educat[illegible], physical planning was an early topic.

With the increase in mutual contacts between colleagues at a national and aninternational level, through books and articles, conferences (papers, formal and informal discussions), study periods abroad (grants, scholarships, sabbatical leave) and so on, discussion about the discipline has increased, and has included discussion about the function of geography as a school subject.

Thus the quantitative paradigm in university geography has had considerable influence on geographical education. The American High School Geography Project has also had far reaching consequences for geography teaching through the world.[2)] In particular we would mention its influence in Britain and West Germany. These influences are implicit in text-books and work-books as well as explicit in projects.[3)]

These developments cannot be separated from developments in society, from social consciousness, from the growth of curriculum theory, and from general and special didactics. There is not space here, however, to work out the complex interplay of these different factors.

After carefully weighing the social and educational contributions of geography in school and in society on the one hand, and the possibilities and limitations of geography as a discipline on the other, we would formulate the aims of geographical education as follows.[4)]

We take the view, that the aim of geographical - both formal and informal education is that man see himself in his relation to his immediate and distant environment. This relationship changes continuously. In order to be able to determine his social and existential position, man must be able to orient himself in his environment and to acquire insight into the changes which are taking place in it. On the one hand, man is part of an ordered environment by his own activities. Physical processes also cause changes independent of man. Thus a continuous reshaping occurs, either gradually or precipitately. It is the task of geography for education to make man thoroughly familiar with the existing physical-spatial and social-spatial structures as well as the genesis of these structures and with the processes especially those concerning spatial behaviour and behavior in space which influence them. As a consequence of the continuing spatial reordering man is constantly confronted during his lifetime with new relationships. The underlying aim is therefore that man can and dare venture independently to acquire insight into for him new spatial social relationships.

These aims reflect the dynamic character of the time with its rapid and radical socio-economic changes. We want to emphasise that in the attempt to realise these aims, there will be scope for the practice of Pattison's four 'traditions' of geography, outlined in 1964 as a basis for discussing the potential input of the subject discipline into the American High School Geography Project: these were the 'spatial tradition', the 'area studies tradition', the 'man-land tradition' and the 'earth science tradition'.[5)]

3. Geographical information units, a survey of the literature

3.1. *Introduction*

In sections 1 and 2 attention has been paid from a societal standpoint to the need for a curriculum theory for educational information and to the aims of geography within formal and informal education. The purpose of this paper has made it necessary to be brief on these themes. Concluding, we can postulate that there is a demand for geographical subject-matter in the form of geographic learning units, a demand which is increasing quickly. We prefer to replace the term 'geographic learning units' by 'geographic information units', for three reasons.

First, the demand for geographic information units is equally applicable to education (school as well as liberal) in general. Thus the use of the same term is to be recommended.

We explicitly postulate that here the word information is used in the original significance of the term, namely content put in-formation, i.e. the highly structured content.[6] The word information (Lat.) was used until the middle of the 18th century. With the development of national languages in international communication the word went out of use.[7]

Secondly, school and liberal education have essentially the same emancipatory function as to geography.

Thirdly, the term 'subject-matter' has a restrictive quality, whereas in viewing the objectives of education, subject-matter is self-evidently source material for thinking activities and not an end in itself.

Geographical information units have varied uses. Research has taught us that there is a much greater variety of uses for such units than we anticipated at the start of our research. They can be used by the teacher in the actual teaching situation, but also students (in school and in liberal education) can work with the units on their own or in small groups.

The geographical information starting points and strategies for achieving the objectives are in principle the same as for devising

units for school and liberal education.

Thus the process is similar even where a broad common basis is being taken. This is very important because from a scientific point of view it makes sense to study the process which is at the root of the design and realisation of geographic information units. The determination of a conceptual model for processing geographical information would signify that a start has been made in developing a geographical information theory.[8)] The forming of such a theory, we think, is essential in view of the functions of and need for geographical information units (see sections 1 and 2).

Three questions must be considered:

1. What will form the criteria under-pinning geographical information units?
2. Who is competent to take the responsibility for developing and realizing such units?
3. What process will form the basis for the development and realization of geographical information units?

To answer these questions, we must turn to two disciplines: geography and curriculum science.

In the following we will undertake some investigation of the literature related to these disciplines. First the geographical education, then curriculum science.

3.2. *A survey of relevant literature*

In geography, there have appeared from the sixties and seventies a number of curriculum projects. Such projects can be seen as a collection of more or less coherent geographic information units. Among them are some of high standard. Unfortunately, we do not always meet in them systematic, explicit criteria, as well as a description of the process of development, that must have formed the basis for the development of the units. Though this is a pity, it is perhaps understandable because in the first instance the output was the important factor. Moreover, a more scientific infusion into geography in the framework of curriculum development is fairly recent.

In a project such as the *American Highschool Geography Project (HSGP)*, the very interesting genesis is described in extenso. The constraints encountered in the development of the project provide insight into the process into which we wish to enquire. In the case of the HSGP the concern was the discipline of geography. And in detail was mentioned the enormous amount of time and energy required for designing realizing the 'activities'.[9] The lack of a model for a functional development of geographic information units is posed by Nicholas Helburn in the Final Report of the HSGP. In the chapter, 'The Development Process', Helburn's contribution to the final report, he describes the 'happenings' in a realistic and human and at the same time a relative way. In fact it sounds as if he sighs as he remarks: 'Arthur and Judith Getis worked nearly full-time from November 1964 to June 1965 on the first urban unit. *They had no model to work from*' (italics V-M).[10]

In a concluding paragraph under the title 'Lessons', he gives a summary of the problems for 'those who venture into the dimly lit corridors of curriculum reform'. Though curriculum reform covers a broader field than our more limited topic, we think the 'Lessons' of such importance that we present them more fully in the foot-notes.[11] After all, the process of developing units, material or as we prefer it 'information' is an exponent and a very essential one in curriculum development. Besides, it became obvious that as we progressed with our research the more the lessons made sense for us.

The structure of the *West-German RCPF* (Raumwissenschaftliches Curriculum Forschungs Projekt) can be analysed in the light of information provided by Robert Geipel, a major stimulus in the initiation and development of the project. An inaugural and an interim conference were held at Tutzing in southern Germany in 1971 and 1975 respectively, from both of which publications emerged.[12] The proceedings of other RCFP meetings have also been documented. These publications provide much interesting information on the how and the why of the West-German project. Thus especially in the report of the RCFP-Goslar conference (March 1976) we find a scheme which could be useful in developing the learning units.[13] Though the scheme does not

form object of research, it could be in the long run - i.e. after repeated use - a stimulus for the development of a process-model.

The autors of the succesful *Oxford Geography Project* have also been inspired (as was the RCFP) by the HSGP. Above all the statement of the goals for each of the activities published in the Teachers' Guide was most impressive. Obviously the aim of the project was a high standard output. Some background is given by the authors in an article in Teaching Geography.[14)]

Regarding other British projects devoted in whole or in part to geography, a varying amount of information has been provided about the rationale of the projects and the way they have set about developing geographic units.

The project GYSL, '*Geography for the Young School Leaver*' (1970-1974) has not produced a handbook outlining its rationale, but articles have been written and there is a discussion of objectives in the Teachers' Guides for each unit.[15)]

One of the other early British projects, the *Bristol 14-18 Geography Project* (which essentially became a 14-16 project) and developed between 1970-1974, outlined its rationale in a very inquiring booklet.[16)] Unfortunately it is now out of print but with reference to the Bristol project, there has appeared in the course of 1976 a folder produced by the course team of the Curriculum Design and Development group of the Open University.[17)] In this folder the Bristol projects work is analysed in terms of its innovational significance in curriculum development in geography. For us it is important that criteria for the production of curriculum materials are given in the sense of geographic units. In the foot-notes the reader will find the criteria fully quoted.[18)]

The *Liverpool Project* 'History, Geography and Social Science 8-13' (1971-1975) has produced a detailed handbook, outlining its general aims and objectives and given attention to the place geography might play in a general humanities framework for this age group.
In developing the units we learned from the handbook and articles that especially attention was paid to the approach of the subjects through the use of key-concepts.[19)]

At the University of London in the Geography Department of the Institute of Education is, since 1976, under development a *Geography Project 16-19.* It is to be hoped that the development of the action process, which we called the geographical information process also will be analysed and described.[20)]

In conclusion, we will pay attention briefly to our own research during the period 1957-63.[21)] From it, it became clear that the planning of geographical curriculum units was a very complex process, difficult to grapple with. This was the time in which the emphasis was on aspects of presentation: verbal content, visual and audio-visual aids. The conceptual structure and its relationships with content and the mode of presentation were not considered, or were insufficiently recognised. At this time also, the discipline of geography was about to be renewed, or, better still, was set on the path to a greater maturity.

Now to our research findings from that period. Our comparative and experimental research indicated that to optimise the planning of geography curriculum units full attention should be paid to:

- mutual coherence between the parts, with a conscious attempt to provide a conceptual structure
- the selection of geographical information to be structured in the light of that conceptual framework, with the presentation of the content a marginal (though not unimportant) factor.

It was these initial research findings that we resolved to extend when the situation was in favour of that happening. This was in 1974. In section 4 we will come back to this follow-up research.

Having come to the end of our short survey of the literature so far as the educational geographical component is concerned, we must now look at curriculum theory, prior to evaluating the outcome of the research.

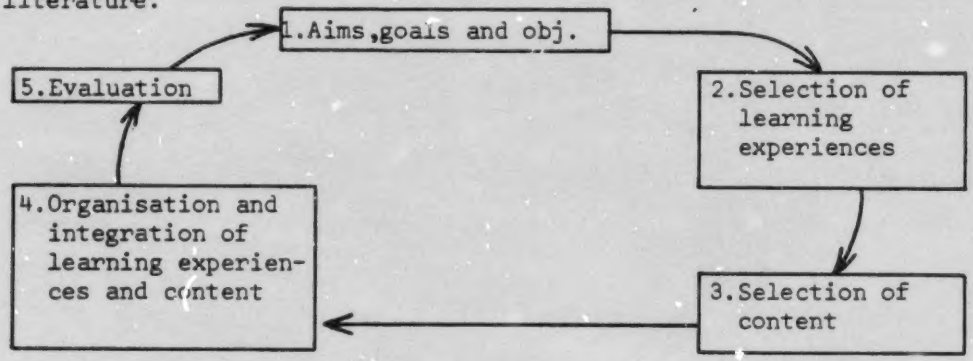
Curriculum theory has gradually evolved over the last sixty years or so, though curriculum discussion is of a much earlier date. Interest in the development of a theory of curriculum development was first shaped in the Age of Enlightenment. It was the first time in history

in which there was systematic thinking about the widening and deepening of education as such. This 'age' was the first time in history in which ideas about content and methods of education were widely discussed, but which have been unable to be translated into practice on a broad scale until recently. The literature of this period gives a fascinating insight into these more enlightened developments.[22)]

With the outbreak of the French Revolution, these promising developments were unfortunately temporarily cut off or at least slowed down. This was at any rate the situation in Europe.

The science of the curriculum is composed of a number of specialisms. Two of them are especially relevant to our purpose: the theory of curriculum planning and educational technology, involving for example the development of learning units, c.q. audio-visual materials. These two fields are of course closely related.

A model of curriculum development shows in its classic form a cyclic picture. And this would be necessary in connection with the need to test the model. As represented in the following diagram, the model recurs again and again in different ideas in the curriculum planning-literature.[23)]



The essential components are aims and objectives, strategies to achieve the aims and objectives (content and teaching-learning strategies) and evaluation, the latter feeding back to the other components.

These essential components can also be perceived in the numerous models of development of learning units. Such models have proceeded from the discipline of instructional design or learning system design. Such a strategy has been worked out by, among others, Gagné, whose long-standing research has provided much insight into optimising the

effectiveness of the instructional process, through his identification of different types of learning.

According to Gagné twelve steps can be discerned in the process of instructional system development[24]:

1. Analysis and identification of needs
2. Definition of goals and objectives
3. Identification of alternative ways to meet needs
4. Design of system components
5. Analysis of (a) resources required, (b) resources available, (c) constraints
6. Action to remove or modify constraints
7. Selection or development of instructional materials
8. Design of student assessment procedures
9. Field testing; formative evaluation and teacher training
10. Adjustments, revisions, and further evaluation
11. Summative evaluation
12. Operational installation

At first sight it did not seem that Gagné's model nor similar models could give us any support in the planning of geographical information units.[25]

The fact is that all these process-models have been generalized to the extent that they do not provide a means of making concrete descisions. about subject matter. Questions like the following are not answered in these models: what are the relationships between aims/objectives and the geographic discipline, or: how should the subject matter component of learning units be gradually unfolded in the development process.

Only after two generations of research did Gagné's components turn out to provide us with starting-points for our curriculum development ideas in geography.

3.3. *Summary and evaluation*

In recapitulating the results of our survey of the literature we can state that both geography for education and curriculum science contribute each according to its nature (of this moment) to the needs of producing

information units. The geography applied to education is concerned with the output, the curriculum science with the structuring of the output. It seems that both require each other.

To a certain extent we got an answer to the three questions we put. We could quote *criteria* for geographical information-units with much agreement (Bristol Project) and from the information on other projects similar criteria can be derived (HSGP, RCFP, Oxford, GYSL, Liverpool Project; NB. Oxford is a 'comercial' venture.)

The required *competencies* by the people designing and realizing geographical information units is not made explicit in the literature we studied. It is obvious that this job should be done by a team of experts with different specialisms in this case composed of geographers, curriculum-theorists and other specialists such as media-experts. In practice, which in some cases run ahead of theory, such cooperation seems to happen incidently. But in practice the different experts should make a conscious attempt to find each other. The delimitation of the input of the different experts must become evident in the light of the dictates of the geographical information process. Again the theory has to be affirmated in cooperative practice.

Principally and in broad terms, curriculum-theories point out the *process* in the form of a model or a system, that must lead to designing and realizing of high-quality information units. The component instructional design is specially concerned with this.

The geographer Helburn highlights, as we saw, the utility of such a model (Final Report HSGP). However a model for geographical information processing is not yet developed by geographers. In the West-German RCFP and in the British Council Projects we did find ideas which could in the long run and in principle contribute to the development of such a model. It is evident that such a model can also be beneficial in the delimitation of the working party.

In the next section we will describe a conceptual curriculum model for the process of the production of geographical information units as developed by us on the basis of two generations of research.

4. A conceptual model for processing geographical information for education

4.1. *Introduction*

In the former sections we placed the need for becoming available geographic information units on a large scale. We started therefore from the objectives of and the need for education with special reference to the geographical component.

In view of the aims outlined well defined demands will be made on the quality of content and on form of the geographical information units. The process that leads to such a responsive product we call the geographical information process. In this section a conceptual model for the geographical information processing for education is presented and described. It is based on two generations of inquiry-projects, totalling ten investigations.[26)]

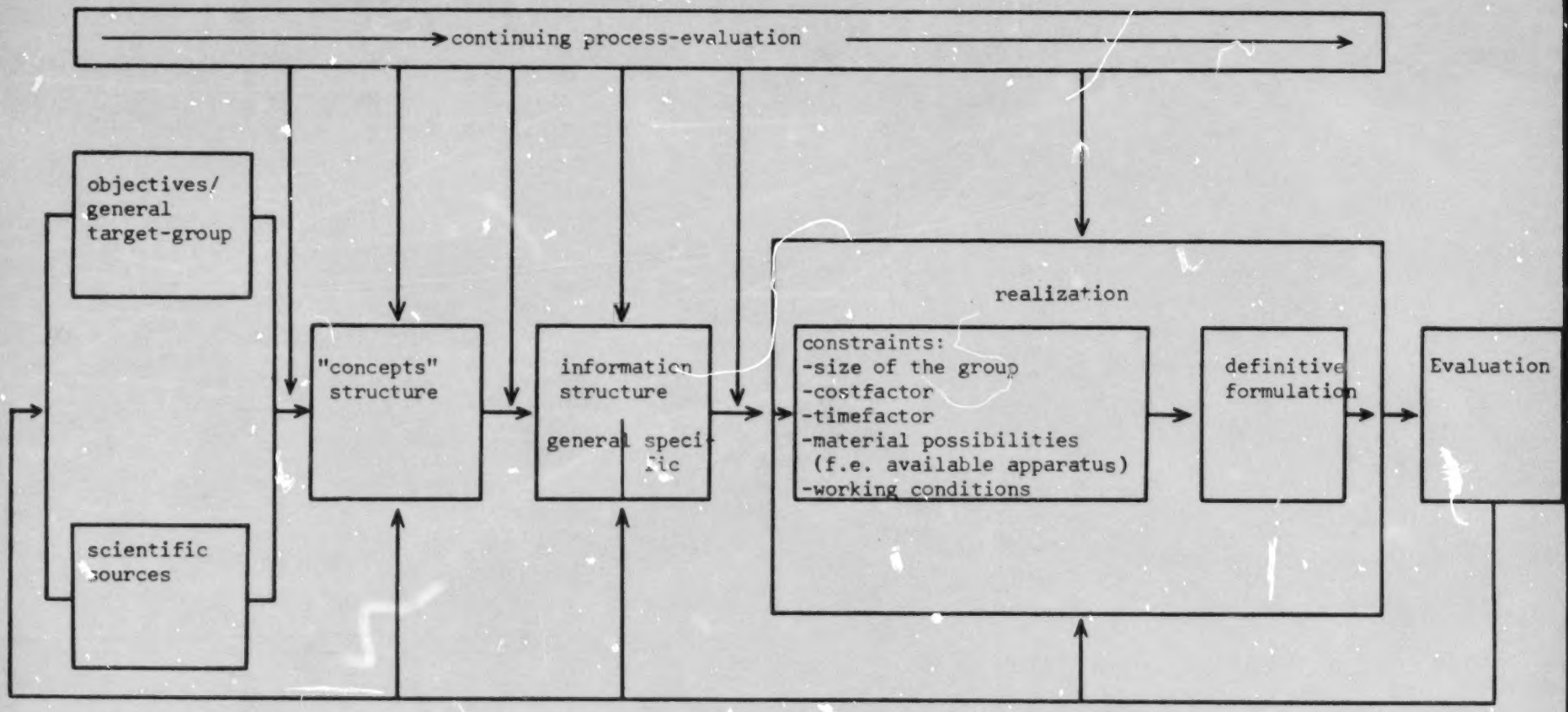
The basic function of a conceptual model is to reflect experiences in an organized way. The elements in the model have the function of explaining propositions for the geographical information process. After the description of the model and a reflection on the model, examples of instrumentalisation in some of the inquiry-projects will follow.

4.2. *The conceptual model: diagrammatic presentation*

Thinking about structures and processes is eased by the visual representation of these structures and processes. This is the reason that here the conceptual model for information geographical acting is presented, first visual by means of a diagram, after which description of the elements follows.

There will be a continual evaluation during the development of the process, so before going to the next phase each completed phase will be re-examined in itself and in relation to previous phases. This kind of process evaluation is necessary to prevent us from losing sight of the process as such.

A conceptual model for the processing of geographical information for education.



© Geogr.Inst.
State University
Utrecht

4.3. *The conceptual model: description*

4.3.1. *Formulating the aims and a roughly estimating of the target-group*

In this fist phase of the conceptual model the formulation of the global aim regarding the theme and the educational perspectives, takes place.

These global aims are of course insufficient to pass adequately through the process in each phase. Each of the phases in the process has its very own aim within the context of the complete model. The global aim concerning the theme and educational perspectives are continually more precisely specified.

In this first phase of reflection on the starting behaviour, the target-group is mentioned provisionally as a category; it is not until the phase of designing of the information-structure and during the realization that a specification follows and the target-group as such becomes of real importance.

4.3.2. *The phase of studying the geographical sources*

In this phase the sources of material relating to the theme are studied. In the first instance these will be secondary sources. It is not the task nor within the competency of the information-geographical educationist to do fundamental geographic research. To research-workers he can point out the necessity of specific source-study or, in joint collaboration, initiating such research as supply for the secondary sources.

We emphasize that it can be important that an information-geographical educationist visits the location and perceives with trained eye. Than he may be doing primary research in the sense of interviews, observations, etc.

The study of sources has to be planned in a broad way and following the methodical principles acquired by the survey of social science. So, the theme as formulated in the aims is studied in breadth and especially depth. If studying of the theme takes place only in the breadth, this will offer the information-geographical educationist an

insufficient base to deal analytically his discipline. That is why it is important that problem-orientated survey of sources is undertaken, which obliges the information-geographical educationist to engage with certain aspects of the theme on a analytical level. The information-geographical educationist must have sufficient command of his theme in terms of geography as a discipline so that he can engage in a creative encounter with the outcomes of his study of the sources in the phase of designing the 'concepts'-structure. A deficit in his command of the theme could lead to a translation of the sources studied or a disorderly choice of contents as related to the aims. This would lead to a situation which is information-theoretical inadequate and thus undesirable.

The phase is finished with a working-document. This working-document has as its primary function the ordering of obtained knowledge and insights. The degree of detail with which the working-document should be worked out will depend on the prior-knowledge of the information-geographical educationist. So, an information-geographical educationist who has an excellent knowledge of a certain theme will feel no need to work out a working-document in detail.

The amount of time spent in the phase of studying the sources depends on several factors. The most important of these are the prior-knowledge of the theme, the range of the theme, the available literature, reading- and studying-skills.

4.3.3. *The phase of the development of the 'concepts'-structure*

This phase is the most essential in the processing-model because an original constellation of contents emerges. For in this phase the concepts and the relationships between them are postulated as a base for the next phase.that of the information-structure. The phase of the development of the 'concepts'-structure forms a very essential element in the processing of geographical information units.

The designing of a 'concepts'-structure is a creative process, the points of departure of this construction being formed by the aims and by the results of the professional study of sources. The 'concepts'-structure is an original construction because it is the outcome of

the results of the professional study of source material, filtered by the aims. In the last resort, this is the function of aims.

In time, the evaluation will prove if the constructed 'concepts'-structure has contributed to realisation of the aims.

Thus, designing a 'concepts'-structure is a creative activity. Something new emerges. It is not, we would emphasize, an activity which involves selection or translation of the discipline. To put it more directly: *it is an activity at an analytical and authentic level within the discipline.*

The 'concepts'-structure forms the hard core of the information processing model. On the one hand it is a culmination of aims and study of source materials, on the other hand it stands at the beginning of the operational phases.

The designing of the 'concepts'-structure requires much effort and dedication because one must put the discipline to the service of the information-geographical aim. Thus, an independent handling of the discipline on a analytical level is required.

It is inherent in the designing of a construction that before the optimal one is designed, there must be a series of drafts. From the successive drafts results an ever stronger structure. After a first draft the designer can, if needed, return to the literature and if the literature is not available or gives insufficient information, there may be a need for further resource-study. Here one can think of a complementary study of sources, that differs in principal from the study of sources in the phase of studying sources (the previous phase).

The 'concepts'-structure in the geographical information process is directional in a very compelling way for the further stages of the process. The information-geographical educationist must keep strictly to the accepted design, under no condition being allowed to deviate from it. If a deviation, for what reason, is needed, it is necessary to pass through the process again from the start. Therefore it is most important that the information-geographical educationist fully agrees with the finalized form of his design. A hastily constructed and ill-considered 'concepts'-structure can cause a major loss of time and energy in a later stage. Talking over the 'concepts'-structure with

professional geographers and different experts in the field of the theme is highly recommended.

The phase of the "concepts"-structure occupies relatively a great deal of time as a result of consider ing:
- the choice of the concepts in the light of the aims;
- the indication of the connections between the concepts in which full account is taken of the shifting in socio-economic and socio-spatial coherence over time;
- and, eventually, the complementary study of sources.

The visible results of all these activities of thinking and visualising is sometimes disappointing for an outsider, namely a half page structure.

4.3.4. *The phase of the designing of an information structure*

Starting from the previously formulated "concepts'-structure the operationalisation activities begin in this phase, at which the target-group is also taken into account.

If necessary, in this phase, a survey of the target-group follows. Most of the time, the survey of the target-group will be restricted to a certain amount of specification. In global terms the target-group often is known. In general, such a knowledge is sufficient for the process under consideration. Of course, in the actual didactic working-situations the target-group has to be known much more precisely.
In the designing of the information structure each element is worked out on the basis of its adjuged value in the 'concepts'-structure. This working out takes place according to the aims and the knowledge of the target-group. Thus the geographical information value, as adjusted in the concepts and the relation between the concepts, is carefully preserved.
The phase of the information structure consists of two sub-phases:
a) the designing of a global information structure and
b) the designing of a specific information structure.
In the global sub-phase the information-content is delineated and also the sequence and the related form-aspects are proposed. Form-aspects include not only an indication of the means of expression, but also the learning-strategy. In the case of the learning-strategy a balance

must be found between expository and discovery learning and justified. Thanks to this procedure one gets a general view of the structure of the information in all its aspects. So the inner harmony in respect of the information-geographical and educational aspects, both within and between the elements, is maintained.
In the second sub-phase, the designing of a specific information structure, the contents and form-aspects are further worked out. Also, the exercises and tasks are in principle formulated. For the exercises and tasks have to form a unity with the information that has become available.

As stated in 4.3.1. each phase in the process has its own objectives within the context of the complete model. This counts especially for the specific phase of the information structure. It is of fundamental importance to formulate precisely the behavioral objectives, the taxonomical categories distinguished by Bloom c.s., as to the cognitive and the affective domain forming the guiding principle.[27)]

In the phase designing the information structure a continuing study of resources, in the sense of consulting sources, takes place, especially during the designing of the specific information structure.

4.3.5. *The phase of realization*

The phase of realization is a complicated one. For all elements of the specific information structure a material form must be chosen. Then all the elements can be worked out in this form.
The choice of the material form of the content, the means of expression and learning-strategy is subject to a series of constraints. The constraints are formed by the conditions in which the information will be or can be used. We mention the size of the group, the costfactor, the timefactor, material possibilities (i.e. available apparatus) and working conditions. If these conditions fundamentally change, so the material form does. At this stage there is the possibility that the constraints will be used as an excuse for one-sideness in the structure of the unit. Often, one loses sight of the content at the risk of mutilating the geographical input.
When a certain material form or a combination of possibilities has been

chosen, then the whole information-unit must be worked out in accordance with the choice. In this phase skilled ancillary helpers, such as text-writers, drawers, media-experts will be called in, conditioned by the knowledge and skills of the information-geographical educationist and the circumstances of realization.
Thus the information receives its definitive "formulation". We emphasize that also in this phase the information-geographical educationist remains responsible for the realized geographical information.

4.3.6. *The phase of evaluation*

Finally we come to the last phase of the process, namely the evaluation. In this phase we must check to see whether the aims have been achieved in other words, if the geographical information, developed according to the process-model, is accepted and understood by the target-group. By this, we speak of product-evaluation.
It is of great importance that the target-group by which the product is evaluated is of equal merit in its composition. By means of a learning-psychological survey, evaluation of learning-conditions and of pre-knowledge, the balance between the target-groups can be easily determined.
The test-questions must be related very exact to the aims and objectives. The scoring of the answers to the questions has to be in such a way that data which can be processed statistically are obtained. In relation to the complexity of the underpinning model it is recommended that the research-worker motivates point by point for both the nature and intention of the question and also the content and the valuation of the answer.
It seems to be a complicated procedure, but it is the only way to obtain ample enough feedback to the different phases of the process and to the relation between the phases. The product-evaluation must therefore enable us to identify where and when mistakes or shortcomings occur. This is essential for the adjustment of the product. After the correction the product must be evaluated again. Such a second evaluation and an eventual renewed correction must be followed, if necessary, by a third one etc. The product evaluation has to go on til an optimal product is obtained.

Also, the product-evaluation contributes to a refinement of the knowledge of and insight into the process-model. When we regard it in this way, product-evaluation is at the service of process-evaluation.
Evaluation activities require a high degree of conscientiousness and thus cost a lot of time and energy. However, when the educational aims are of such a great importance, as in the case of geography, and in relation to the increasing demands on education, where the information can be used again and again then it seems that the investment of time and energy is fully justified. (See the first paragraphs of this paper).

5. A reflection on the conceptual processing curriculum model.

Now we have postulated and described the process we will illustrate the process in the next section through selected examples from projects that have formed the basic material for constructing the model. But before we do so, we will give a short reflection on the model. In doing so we hope to support the reader and the potential user of the model with some useful background information.
What then is distinctive for the model?
First we think an authentic systems approach is characteristic of the model. It is not a loose composition of curriculum elements to be realized in a desirable order, but is very strictly structured. The term system is applicable here, the different phases, the elements of the model, having the function of sub-systems. In our description of the phases of the process this becomes clear. In a next publication we will further work out the different sub-systems within the system and as well the connections of the sub-systems with the providing sciences: viz. geography, geographical education and the educational sciences (incl. curriculum theory).
A *second* characteristic of the model we think is the emphasis placed on the discipline and its mutual connections with the objectives which go on to provide a basis for the 'concepts'-structure. A thorough survey of the discipline sources relating to the chosen theme or region is a necessary condition in our model. By thorough we mean along the normal lines of social scientific investigation (posing the problem etc.). Only after this often very time-consuming work has been done can the next step be taken. From the interaction between the objectives and the outcomes of the study of the sources, the concepts-structure will be designed. We underline this engagement because so much attention has been paid in the last 15 years

on the formulation of a taxonomy of the objectives (we can almost speak of an objectives-syndrome), that it seems only a matter of selection of material from the discipline to fill in the objectives. We are convinced that this viewpoint has done much harm to the output as well as to geographical education and the discipline as such. Of course we would not deny the importance of the objectives model. We will only point to the one-sidedness of the argument.

A *third* and last characteristic we want to emphasize is the position of the media. We have separated the means of expression from the communication-channel. We take the view, on the outcome of our previous research, that the different means of expression are primarily sources of knowledge, thus they should completement and not replace each other. So in the phase of information structure attention should be paid, as we did in the model, to the best means of expressing the content. Only in a later phase, in accordance with the constraints, we do have to choose a channel for our recording our means of expression. So in its ultimate form the means of expression is really a means of optimizing the information (supposing that our choice was right). Thus we hope to avoid that the content will be presented essentially in a written,verbal, form with decoration with pictures, maps, sketches, tables, graphs etc. just for cosmetic effect. We explicitly wish to see the media functioning in harmony with the information. Of course many 'authors' in practice do pay attention to this matter. It was our intention here to present the functional view in a systematic way and within the model. Apart from that we hope in the near future to get rid of the word illustration in the context of geographical information. In fact the word is a relict of the Gutenberg period in which the printed word was holy and the illustration a kind extra of the author.

6. An explanatory illustration of the different phases of the conceptual curriculum model from the projects

6.1. *Introduction*

In this section so we add flesh to the skeleton of our conceptual model. The model is emerged from the experience of 10 projects[26]. All these projects have been undertaken at the Geographical Institute of the Netherlands State University in Utrecht. The team engaged in this work, was the staff of the Dep. of Human Geography for Education and Information Transfer, in cooperation with doctoral students in Human Geography as relevant to education.

A problem is providing you with examples relates to the language-barrier. It is not feasible to give you very extensive extracts from the projects, which would be the best way to give you the fullest insight into the nature of the process in reality. We propose in order to solve the problem to illustrate each of the elements of the conceptual model by giving you a fragment of related documents translated into english. Each fragment will be very briefly introduced by some comments on the functions of the project.

We would be happy to provide full information about each of the projects if that would help readers to work along with and test our conceptual model for the processing of geographical information for education.

6.2. *The phase of formulation of aims and the rough estimation of the target-group*

6.2.1. *Introduction to the example*

As an illustration of the considerations which play a role in this phase, a section of one of the units of the Participation Project Randstad-2 (PPR) is here included.

This project was set up as a pilot-study within the framework of the activities of Commissie Modernisering Leerplan Aardrijkskunde (CMLA, Commission on the Modernization of the Geography Curriculum) and is now being executed as a research-project at the department Human Geography for Education and Information Transfer with financial aid of the Stichting Leerplan-ontwikkeling (S.L.O., Foundation of Curriculum-Development).

This section is intended to indicate, from the interplay between general educational aims and the scientific geography, general aims for the planning of learning-units can be formulated. Then the target-group is indicated in general terms, with some specification, which must be required at a citizen-participant. The nature of these qualities was fited in a pilot-study stage (PPR-1).
The project is realized by Drs. Hein Hoitink and Drs. Godelief Verschuren (research-staff members) in cooperation with the other members of the staff. In developing and realizing the simulation-game, which is part of the project, the students Nelly Lemmens and Jan Beyer will participate. Also this simulation-game will be developed along the pattern of the conceptual model.

6.2.2. *The illustration from the Participation Project Randstad-2*

The general aims of education

The most recent statements about the overall aims of education in the Netherlands are studied. For this, among other things, the 'Contourennota' (= General plan for Education) and the Memorandum of the CMLA (Commission on the Modernization of the Geography Curriculum) were consulted. This consultation had the purpose of arriving at a formulation of the general aims of the learning-unit, according to the overall aims of education. The contents, that are presented here can thus be seen in this context as strategies to reach the overall aims.
The 'Contourennota' a.o. suggest that since the last century the following basic aims as related to the pupil are central:
1. personal development
2. social preparation
3. professional training
In our view, geography has a special contribution to make to the achievement of the first two basic aims for education. In the Minister's of Education 'Contourennota' it is pointed out that the pupil must be prepared for living in society which expects from him involvement in its happenings, an ability to formulate and express opinions about there happenings, and an active contribution in the preservation and strengthening of the democratic order. These statements are entirely in harmony

with the insights, that we acquired during the PPR-1-research. PPR-1 has researched into the role of geographic information in the promoting citizen participation in spatial planning. We have made contributions to active participation of citizens in the regional plans of east and west Zuid-Holland.

The general aims of the learning-units

It is possible to function democratically at many spheres in society. This might be schools and universities in government management and so on. To be able to formulate a general aim for the learning-unit, selection of one of these spheres must be made. Starting from the discipline (geography) and in the light of the PPR-1-research, it is obvious that we have chosen from government management particularly the field of spatial planning. Democratization of the planning process is achieved when the citizen participation is realised. The general aim is formulated as follows.
The pupil on achieving adulthood must be able to participate effectively in the management of spatial planning and be aware of his social responsibility in this field.

The target-group

In the design and production of the learning unit we apply to the Lager Beroeps Onderwijs (LBO, Lower Vocational Education). We have opted for the LBO, because as yet little has been for the very large proportion of pupils in vocational education.
For a first acquintance we established contact with a teacher at the Stichting Opleiding Leraren (SOL, Teacher Training College), Utrecht who has had much experience in the LBO as a teacher. Through his intercession we gave a number of lessons at a LBO-school in Culemborg.

First specification of the general aims

From the preceding surveys (PPR-1) it became clear that, if people were to be able and willing to participate in regional planning they would have to conform to a number of conditions:

1. They must have knowledge of and insight into:
   a. the functioning of spatial planning;
   b. the power of the citizen to influence the course of spatial planning

c. the procedures of planning and decision-making at the level of regional planning;
d. the organization and functioning of the procedures of citizen participation within the regional plan;
e. the content of the regional plan;
f. problems related to the use of space in the regional plan and the causes and consequences of such problems.

2. They must be motivated to participate as citizens which will depend on sympathy, social conscience, personal enthusiasm among others.
3. They must have a command of certain intellectual and social skills, such as critical thinking, the ability to express and debate opinions, to respect the opinions of others etc.

A number of these cognitive and affective skills can be transmitted to the pupil in the process of education, in order to equip them to participate effectively as citizens. An exception is formed by the conditions mentioned under 1.c. till 1.e., because it is still unknown where, when and with which plans he will be confronted.
Regarding condition 1.f. it can be postulated that the pupil must be able to achieve a quick grasp of physical reality thus of spatial patterns and processes. In consequence, the aims of the learning-unit can be formulated as follows:
The pupil should:
a. gain insight into the functioning of the spatial planning;
b. be aware of the responsibilities they have as a democratic citizen to influence the spatial planning structures and processes;
c. be able to grasp readily these patterns and processes in reality;
b. be able to evaluate the government's spatial planning measures and, if be needed, to express and debate his or her judgements on these measures.

6.3. *The phase of the study of sources*

6.3.1. *An introduction to the example*

The outcome of the study of sources is the production of a working document. The following is an example of the table of contents on one such working document.

It is from the project 'The Utrecht Labour Market over 200 years: 1778-1978'. This project was undertaken at the request of the 'Nederlandse Maatschappij voor Nijverheid en Handel' (Dutch Society for Industry and Trade), Dept. Utrecht, as a students research project by the students Paul van den Boorn, Jan Kolkman and Winfried van Leeuwen. Project-leader was Mrs.Dr. Henriëtte Verduin-Muller. In the phase of the study of sources there was a close cooperation with Prof.Dr. Marc de Smidt, head of the Dept. for Applied Geography of the Geographical Institute.

The Department Utrecht of the Dutch Society for Industry and Trade celebrates its 200th anniversary in the year 1978. It was thus appropriate that a number of schools on secondary and vocational level should pay attention to changes in the local labour market during the past 200 years and to how the pupils see the situation in the future. For these reasons the Department asked the Geographical Institute of the State University of Utrecht to provide the schools with the necessary geographic information units related to this theme. This request was accepted by the Dept. of Human Geography for Education and Information-transfer (SGOI).

The means to this end took the form of a doctoral project for three students. In the light of its aims SGOI was glad to accept the request of the Dutch Society. The task of the project team was to provide

a) documentation materials for the teachers (see the working document)
b) geographic information units for the pupils and for the teachers to work with.

The working document counts 313 pages, with a very specified table of contents. So we decided to give here only main outlines of the contents.

6.3.2. *The main outlines of the table of contents of the working document of the project: 'The Utrecht Labour Market over 200 years: 1778-1978'*

Table of content, Foreword, Introduction to the working document

Part I : The labour market p. 3-27

1. The modern concept of 'labour market'
2. The labour market and social development
3. The individual and the labour market
   - 3.1. The pre-industrial period (pre-1880)
   - 3.2. The industrial phase
   - 3.3. The late-industrial phase: the transition to the post-industrial society

Part II : Developments in the labour market in Utrecht during the period 1778-1880 (5 sections with sub-sections) p. 27-112

Part III : The development of the labour market in Utrecht during the phase of industrialisation (4 sections with sub-sections) p. 112-194

Part IV : After 1940, on the road to the post-industrial society p. 194-313

1. Introduction
2. The Dutch framework (4 sections)
3. A general picture of Utrecht after the war
4. The development of the population of Utrecht after 1945
5. Economic activity and the working population of Utrecht (9 sub-sections)
6. Social aspects of living and working in Utrecht (5 sub-sections)
7. Conclusions and perspectives for the future

Literature

6.4. *The phases of designing the structure of concepts and the information structure*

6.4.1. *An introduction to the example*

In the next few pages selections are provided from the description of the development process of the 'Eindhoven'-project. The purpose of these fragments is to illustrate the phases mentioned.

In the context of the 'Eindhoven'-project (1977) instructional materials about the spatial processes that are taking place in the Agglomeration Eindhoven, as well as about the form of governmental organization that has been set up for a better guidance of these spatial processes (name of this organization: Agglomeration Eindhoven), were designed and realized.

The geographic information-units were intended for use in the ninth and tenth grades of schools within the agglomeration. The project was undertaken as a students research project by Marcel Bayer, Jan van Buul, Hans Dekker and Miek Hoogbergen. They frequently consulted with representatives from the 'Agglomeration Eindhoven'.

Drs. Rob van der Vaart was leader of the project. During the phase of the analysis of disciplinary sources, there was a close cooperation with drs. Ben Driessen, an expert on the geography of the Netherlands from our department of Applied Human Geography.

The following sections are to be found on the next pages:

- A diagram showing the *structure of concepts*.

In the left part of it, the whole concept structure is given, being the hard-core of the geographic information unit to be realized. In the middle part it is suggested, that the pupils should learn that the processes mentioned on the left influence the spatial structure continuously and that changes in the spatial structure are also caused by societal and other developments. The right part of the structure shows the designer's intention. It also draws attention to the human individual as an actor 'behind' the spatial processes.

- An overview of the *global information structure*.

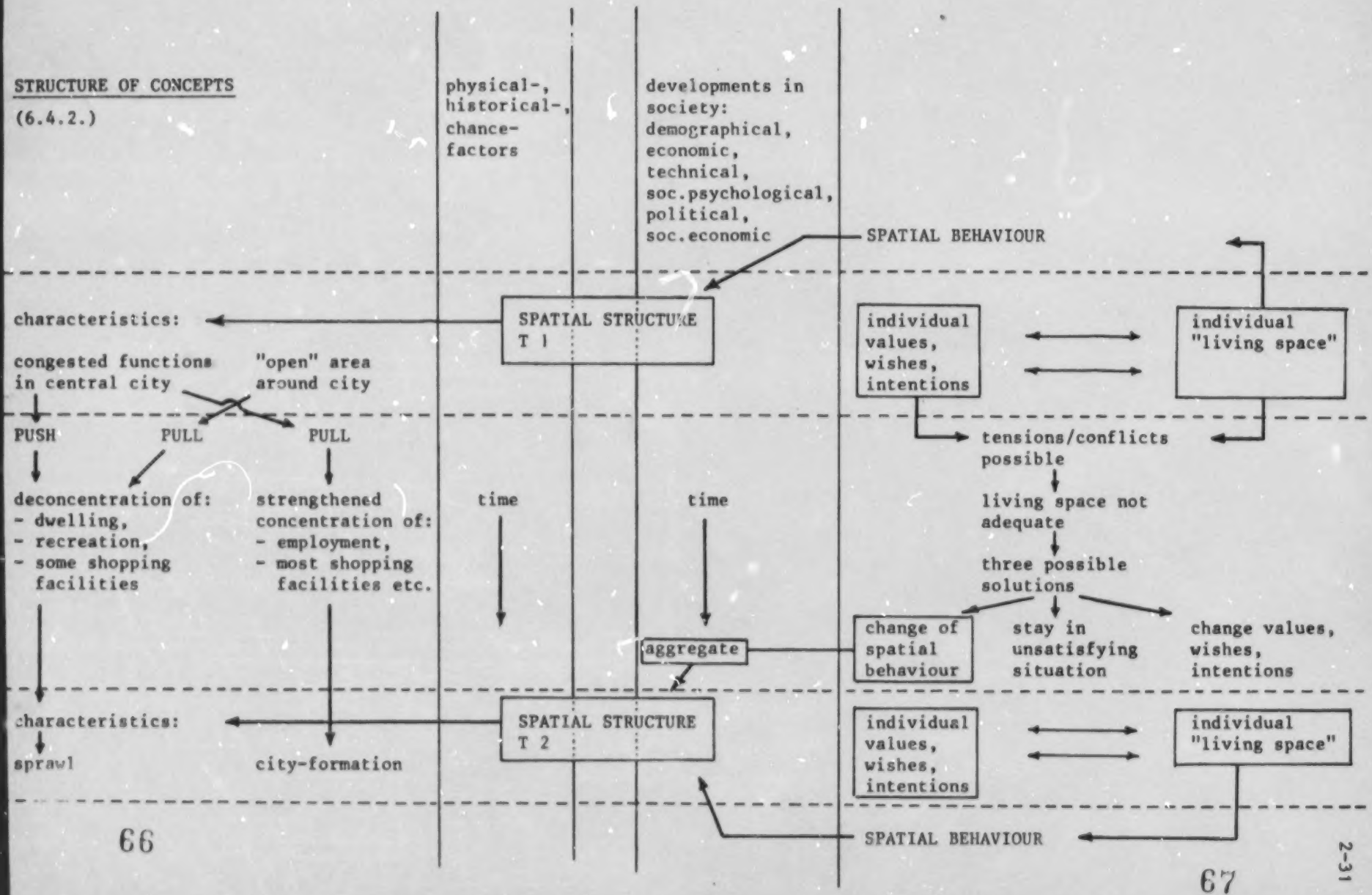
In the left column the sequence of contents is mentioned in general terms. This sequence is to be realized in the instructional materials with the ultimate purpose of giving an insight into the structure of concepts involved. In the right column there are some general suggestions concerning the learning strategies and the means of expression to be used. In practise, the designing of such an overview proves to have an important heuristic function: from the overview it can easily be seen whether the intended sequence of subject matter and learning strategies offers enough variation or not.

- A fragment of the *refined information structure*.

Here a minor part of chapter 3 of the global information structure has been elaborated (the section about Housing development 1950-1975). For this detailed elaboration a lot of additional reading is necessary. Suggestions for exercises (under reference to Bloom's taxonomy), text-fragments and visual materials are all included. It has to be established whether the refined structure remains functionally derived from the structure of concepts, before it can be worked out into the final set of instructional materials.

6.4.2. *The Eindhoven-Project: the structure of concepts, an overview of the global information structure and an example of the refined information structure*

The structure of concepts.


STRUCTURE OF CONCEPTS
(6.4.2.)
physical-, historical-, chance-factors
developments in society: demographical, economic, technical, soc.psychological, political, soc.economic
SPATIAL BEHAVIOUR
characteristics:
SPATIAL STRUCTURE T 1
individual values, wishes, intentions
individual "living space"
congested functions in central city
"open" area around city
PUSH
PULL
PULL
tensions/conflicts possible
deconcentration of:
- dwelling,
- recreation,
- some shopping facilities
strengthened concentration of:
- employment,
- most shopping facilities etc.
time
time
living space not adequate
three possible solutions
change of spatial behaviour
stay in unsatisfying situation
change values, wishes, intentions
aggregate
characteristics:
SPATIAL STRUCTURE T 2
individual values, wishes, intentions
individual "living space"
sprawl
city-formation
SPATIAL BEHAVIOUR

An overview of the global information-structure

CONTENTS/SUBJECT-MATTER	"FORM"/LEARNING STRATEGIES	NR.OF LESSONS
1. Introduction		
Try to get students involved in subject-matter. Brief overview of contents of instructional materials; state goals for students, so that they know, what overall will expected from them.	Tape-slides-program about Agglomeration, in which central problems and characteristics are shown. Written text.	1
2. Development until 1950		
Gradually strengthening influence of man on landscape. Stable agricultural system 800-1800.	Expository in character. Exercises for group discussion	2
Impact of early industrialization: concentration-processes in residence, employment, amenities	Many visual materials and text. Questions and exercises for individual work.	
Spatial structure at about 1950	Expository in character. Exercises for group discussion.	
3. Concentration and de-concentration processes		
Spatial structure 1950 as starting print. Analysis of the processes mentioned from the viewpoint of the spatial behaviour of families, companies, etc. Causes and effects of these processes.	Students work two by two. Work through materials by means of many exercises (with statistical sources, interviews etc.)	2
Generalizations about concentration processes in cities and about de-concentration of functions towards the countryside.	Expository in character	
4. The spatial structure now		
Structural-analysis of the area, by studying the functions separately (residence, employment, amenities, communication) and searching the interrelation is between these functions.	Excursion through the area by bicycle. Exervises in the field. Structure-analyses with maps, visual materials, aerial photographs, etc. (Working in groups).	2
5. Agglomeration Eindhoven		
Conflicts/problems in landuse, conclusions from previous chapters. Need for planning. The various governmental and planning levels; attention to democratic functioning of planning. Function of Agglomeration as a planning agency. Place amidst of other planning levels. Non-planning functions of Agglomeration.	Expository in character. Many resources drawn from officials plans and laws. Visit to the Agglomeration-office.	2

CONTENTS/SUBJECT-MATTER	"FORM"/LEARNING STRATEGIES	NR.OF LESSONS
6. Meeting of the Agglomeration-Council		2
Simulation of planning problem at Agglomeration level (planning of a new road Eindhoven-Valkenswaard). Six conflicting interests-groups are represented, including the Agglomeration.	Simulation game; evaluation group-discussion afterwards.	2
7. Evaluation		
Posttest	Individual work	1
	Total number of lessons	12

A fragment of the refined information structure (chapter 3 of the global information structure, section 4).

4. Housing development 1950-1975

Exercises: What percentage of the population of the agglomeration lived in the city of Eindhoven in 1950/1960/1970/1975.
Why has this percentage been declining over the years?
Where has the population growth been faster (1950-1975): in Eindhoven or in the surrounding villages?
Text: Explanation of the faster population growth of the surrounding villages: housing
supply : in Eindhoven could not keep pace with the demand. This demand has been considerable because of:
- natural population growth
- migration
- a decrease of the average number of persons per dwelling.

Exercises: Calculation of the number of houses to be built in the coming years on the basis of some demographic figures.
Text: Gradually it is becoming more difficult to find space in Eindhoven suitable for housing development.
Changes in the demands people make on houses and their environment: gardens, more modern comfort, more space in and around houses, no through traffic, etc.
Exercise: What do Eindhoven and the surrounding villages have to offer in response to these heightened demands? (Analysis of physical features and existing spatial structure in relation to possibilities for housing development).
Text: In principle more people are now in the position of being able freely to choose where to live (because of higher incomes, more leisure-time, increased mobility).
Exercise: Where do you think families with little children prefer to live? Students? Aged couples? Families with grown up children?

Statistics: Migration rates Eindhoven (1950-1976) and surrounding villages (1970-1976). Related exercises.
Exercise: Why is the population of Eindhoven still growing? In what villages has the suburbanization process been going on very fast? Explain.
Statistics: Population of the municipalities of the agglomeration 1950/1960/1970/1975.
Question: Which municipalities are growing very fast? Which very slow? Explain.
Text: Concluding remarks about the growth rates of the municipalities.
Exercise: Why have the bigger municipalities been growing more slowly in recent years, and the smaller villages more quickly?
Statistics: Housing supply of the municipalities 1956 and 1971.
Visual: Photographs of newly built estates quarters in different municipalities.
Text:
The statistics just mentioned illustrate the growth of the municipalities, now expressed in numbers of dwellings. The photographs show the character and quality of the dwellings. Suburbanization from Eindhoven does not stop at the agglomeration boundaries. Many people migrate to villages further off (villages of the "second ring": Sint-Oedenrode, Oostelbeers, Vessem, Hoogeloon etc.).
Statistics: Figures about migration from Eindhoven to the villages of the "second ring".
Exercise: Exercises in which the fundamental ideas from this section have to be applied in the explanation of housing situations in other location (outside the agglomeration).

6.5. The phase of realization

6.5.1. An introduction to the example

To illustrate the output of the phase of realization once again the project 'the Utrecht Labour Market over 200 years: 1778-1978' is used (for the context of the project see 6.3.1.).
The output of this phase of the project, the next step after the refined information phase, consists of ten geographical information units, spread over two work-books A and B and a tape-slide program.
Workbook A hold units which can also be used in the other social science subjects (history, ecenomics, civics, social science).
In workbook B are inserted the units specific to geography.

In the first place units were developed for secundary schools (for the 16 year age group or over) in Utrecht and its vicinity, however soon it became clear that also vocational schools wanted to make use of the units. To our surprise the vocational teachers found the material very suitable, they 'translated' its content for their purposes at the same time maintaining the structure of the units.

To give the reader an idea of the structure of the output the table of contents of both the workbooks are given here.
Workbook A (an integration of social science subjects)
unit 1, part 1, Visual and textual information of the tape-slide program
unit 2, part 2, The labour market, nature and function
unit 2a, Living and working in the pre-industrial society
unit 3a, The Utrecht labour market in the industrial society
unit 4a, Living and working in the post-war society
unit 5a, The labour market situation after 1945
unit 6a, In applying for a job, a simulation game
Workbook B (geography)
unit 2b, The accessibility and centrality of Utrecht
unit 3b, The difussion pattern of the industry in Utrecht
unit 4b, The changing quality of housing
unit 5b/8b, An excursion through the innercity of Utrecht
The units can be studied:
. linear: 1-6a, then, 2b-4b or
. alternative: 1, 2a+2b, 3a+3b, 4a and 5a+4b, 6a, 7a, 8a.
The excursion can be inserted anytime.

We now will give some detail about unit 4b: The changing quality of housing.

The core of the unit is about spatial mobility in the city including movement of people to suburbs under the influence of a whole series of factors (social and economic activities, demography, transportation, amenities, leisure time etc.)
In 6.5.2. the first three sections of the unit are given in the same frame work as the original unit in Dutch.
The unit counts 16 pages and is divided in seven sections, with a great variety of assignments.

These sections are:

1. Factors which influence housing
2. Living in the pre-industrial society
3. The first phase of extention of the town (until 1940)
4. The house building after the war
5. The changes in the older estates
6. The division between living and working
7. The suburbanization

6.5.2. *A fragment of the output from the project "The Utrecht Labour Market over 200 years: 1778-1978"*

UNIT 4b. THE CHANGING QUALITY OF HOUSING

This unit will treat changes in the location and the way in which the population of Utrecht is housed.

1. Factors which influence housing

Person wishes to live in as pleasant a place as possible. Therefore he makes certain demands. In the choice of a house he pays attention to several matters that are important to him to live pleasant. These matters can be grouped under the following headings:

1) the quality of the house: size, state of upkeep, facilities, etc.;
2) the quality of the environment in which the house is located;
3) the distance from the house to the work-place;
4) the price of the house.

Far from everybody lives in the way and the place that seems "ideal" to them. There are a number of restrictive factors:

1) the availability of houses;
2) the income that determines the price one can pay for a house;
3) the mobility of the members of the household;
4) personal factors (family, acquaintances, or attachment to the old house);
5) inertia (when one has a house once, one will not move so quickly).

Under mobility we understand the "liberty to move" of people. The mobility is in the first place dependent on the transport technology, that determines the capacity and speed of the transport of people. Next mobility is dependent on income, determining whether one can use a certain means of transport.

Not everybody needs the same kind of house. Some prefer the joint occupance of a house (students for example). Others like to live in the countryside etc.

1. Which of the given factors play a role (or not) for each of the following households?

Then a number of household-stories are given, with examples of factors which can determine the place of living (assignment, see next page).

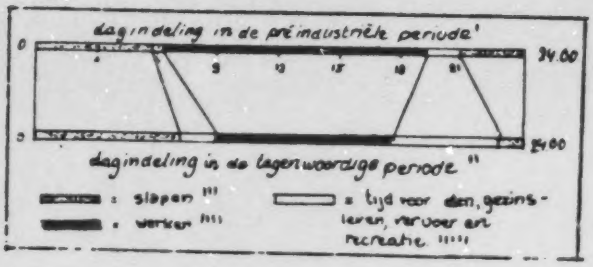
FAKTOREN DIE DE PLAATS VAN HET WONEN KUNNEN BEINVLOEDEN x)

KENMERKEN VAN DE WONING 2x) ZELF	KENMERKEN VAN DE WOON-OMGEVING 3x)	FAKTOREN DIE ALS "HINDERLIJK" ERVAREN KUNNEN WORDEN 4x)
goede sanitaire voorzieningen	nabijheid school	spelende kinderen op straat
nieuw huis	werk	veel doorgaand verkeer
oud huis	schouwburg	slecht onderhouden woning
4 of meer kamers	sportvelden	veel geparkeerde auto's
2 à 3 kamers	winkels	lawaaierige buren
huur tot ƒ300,-	café	veel bedrijven in de buurt
huur hoger dan ƒ300,-	park	geen buren
bovenwoning of flat	parkeergelegenheid	
woning of tuin	openbaar vervoer	
	landelijke omgeving	

DE HUISHOUDENS (The households)	BELANGRIJKSTE KENMERKEN VAN 6x) WONING 7x)	WOONOMGEVING 8x)	FAKTOREN WAAR MEN ZICH NIET AAN STOORT 9x)
1) Fam.van Vliet: Dhr.van Vliet (40) is vertegenwoordiger voor het distrikt Midden-Nederland. Hij is met zijn auto de gehele dag onderweg en houdt ervan dan 's avonds te klaverjassen. Mevr.van Vliet (38) is huisvrouw, heeft geen rijbewijs en heeft haar handen vol aan het huishouden en de kinderen. Drie kinderen, Bas (12), Marja (9) en Keesje (7). Bas wil graag voetballen, Marja speelt evenals Keesje het liefst in de buurt met vriendjes en vriendinen.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2.
2) Achmed Bakhtum (30) is een ongeschoolde gastarbeider. Hij is een jaar geleden van Marokko naar Nederland gekomen en wil zoveel mogelijk geld naar zijn gezin sturen. Verleden week heeft hij een bromfiets gekocht.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2.
3) Mevr.v.d.Hoeff (78) is al 25 jaar weduwe. Ze is slecht ter been en heeft een bescheiden pensioentje. Ze zit graag thuis voor het raam om naar buiten te kijken en wat te borduren.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2.
4) Fam.v.d.Lek: Prof.v.d.Lek (61) is docent aan de universiteit, waar hij iedere dag met de auto heen gaat. 's avonds schrijft hij meestal aan een boek of leest hij. Mevr.v.d.Lek (58) is gemeenteraadslid en huisvrouw. Dit geeft haar een meer dan volle dagtaak. Zij is in het bezit van een auto. Zij hebben drie kinderen die getrouwd zijn en vijf kleinkinderen.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2.
5) Anneke Smit (27) en Peter Koot (35). Anneke werkt als telefoniste voor halve dagen in het centrum van de stad. Ze is in het bezit van een autootje. Peter, met wie ze samenwoont, is een (nog) weinig succesvol kunstschilder en beeldhouwer. Zijn hobby is biologisch-dynamisch tuinieren.	1. 2. 3. 4.	1. 2. 3. 4.	1. 2.

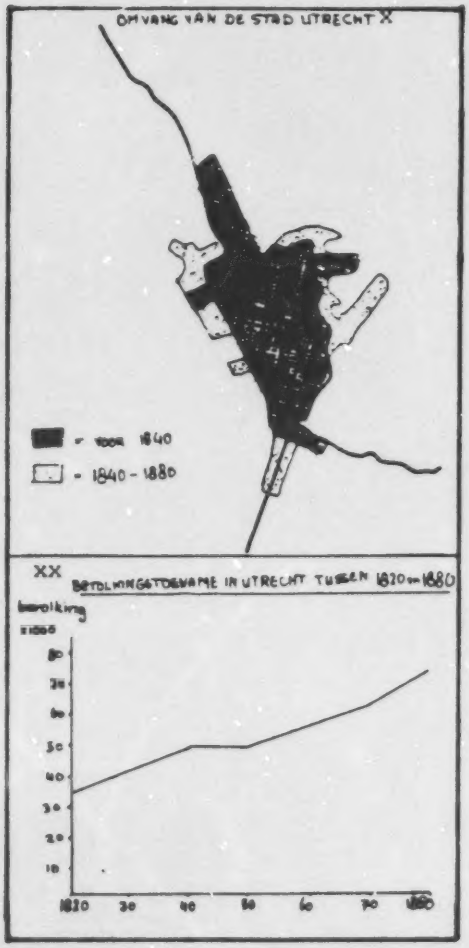
x) Examples of the factors which can determine the place of living
2x) characteristics of the house; 3x) characteristics of the living-surroundings;
4x) factors being experienced as a nuisance; 6x) Important characteristics of
7x) the house; 8x) living-surroundings; 9x) factors of no importance

fig.1



' spending a day in the pre-industrial period
'' spending a day at the present time
''' sleeping
'''' working
'''''time for eating, family-life, transport and recreation.

fig.2.



2. Living in the pre-industrial society

The small earnings of the large part of the population and an underdeveloped transport-technology determined the housing-structure in Utrecht in the period before the Industrial Revolution.

Most people had to work the whole day to be able to subsist (as you can see in fig. 1). As a result working had a central place in daily life. One gave less priority to housing conditions. Moreover earnings were so small, that it was almost impossible to aspire to an improvement in housing. Those who had decent shelter could be satisfied.

The mobility of the population was small. There were no fast means of transport and the upkeep of a horse and carriage was expensive, so that such means of transport were only available for the rich. Most people had to travel on foot.

The low quality of transport and the small amount of time that could be given for the transport, resulted in a very concentrated pattern of housing.

Only the bourgeoisie were exceptional. Often they had more leisure time to dispose of and also the financial means, so they were more mobile and could more readily achieve their desires for housing.

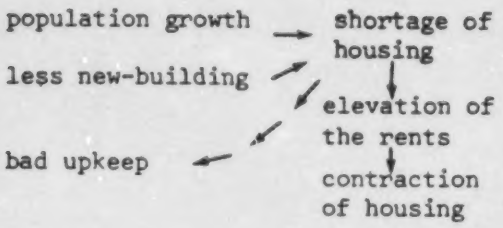
In the 19th century there was a strong pressure on the housing-market. The population grew fast. On the one hand by natural growth, with the birthrate higher than the mortalityrate. On the other hand there was a movement from the countryside to the town.

x size of the town Utrecht

xx population-growth in Utrecht between 1820-1880

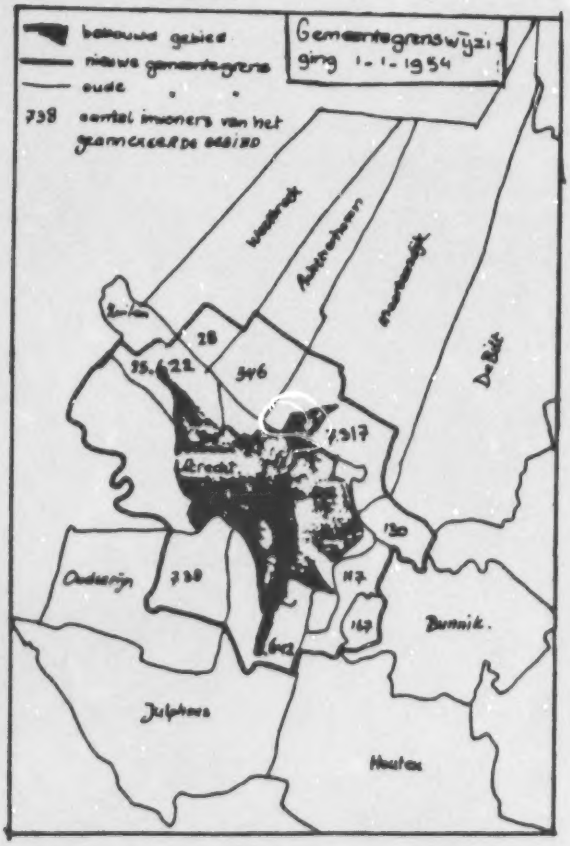
Fig. 3

THE HOUSING-MARKET



2. How can you explain the contraction of the housing?
3. Can you also give an explanation of the fact that many houses are no longer well kept up?
4. Are these kinds of things still occuring?
5. Why was the building of working-men's houses a matter for particular organizations?
6. Is this still the case?

Fig. 4: Changes of municipal borders 1-1-54



The towm accomodated this growing number of inhabitants mainly in the area within the canals. Enlargement of the built-up area did not take place for the time being (see fig. 2). The consequences of the situation are illustrated in fig. 3.
In the second half of the 19th century people became aware of the bad housing-conditions of the workers and in Utrecht social welfare organisations came into existence to try to achieve the building of decent houses for the poorest groups of the population.

3. The first phase of extention of the town, until 1940

From 1880 the first extension of the town on a large scale began. By about 1940 the city had grown over the boundaries of the municipality, as you can see in fig.4.
A large part of the municipality of Utrecht was built-up. Some of the neighbouring municipalities had also built housing estates up to the boundary with Utrecht. Partly this was necessary, because there were factories, as in Hoograven (Jutphaas) en Zuilen (Zuilen). On the other hand it was also to attract affluent sections of the population of Utrecht to their own municipality, as in the case of Tuindorp (Maartensdijk).
The extension of the town did not take place "wildly" as in former times, but was planned. Different sorts of estates were built in which houses of a particular price range dominated. By building these different types of houses, a spatial segregation was established between different social groups, that was not known to such a degree in the pre-industrial society.

With the aid of fig. 5 and table 1 we trace the concentration of social/occupational groups in the different social areas.

Fig. 5: Division of districts of Utrecht 1960

01 Inner City
02-03 A'damse Straatweg tot Marnixlaan
04 Nieuw Zuilen
05 Vogelenbuurt, Tuinwijk, Wittevrouwen
06 Tuindorp, Tuindorp Oost
07 Oost
08 Sterrenbuurt, Gansstraat
09 Tolsteeg, Hoograven
10 Stationsbuurt
11 Rivierenwijk, Croeselaan
12 Kanaleneiland
13 Kanaalstraat, Vleutense weg, Lage Weide
14 Oog in Al
15 Overvecht

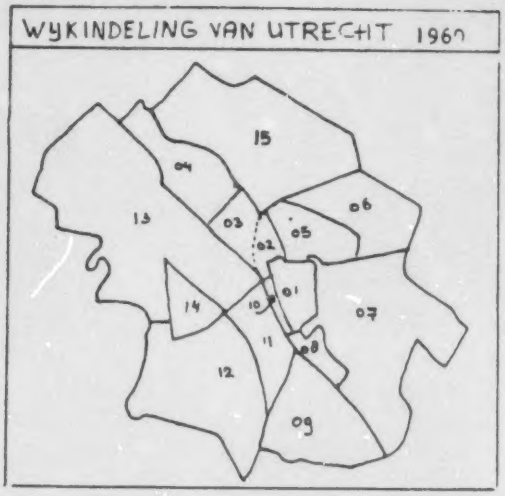


Table 1: The occupied population of Utrecht divided according to economic grouping and place of living in 1960

	primary sector	secondary sector	tertiary sector	quaternary sector
01	0,8	33,3	28,6	36,9
02,03	0,7	50,1	26,9	22,1
04	1,4	53,2	24,5	21,8
05	0,6	40,8	30,5	28,1
06	1,3	20,8	32,9	43,3
07	1,3	25,1	24,1	49,3
08	1,8	50,2	26,6	23,3
09	0,8	36,0	27,8	34,5
10	0,4	17,6	20,1	63,6
11	0,6	39,4	31,8	28,2
12[x]	1,6	31,4	27,1	38,6
13	0,5	47,4	28,1	23,9
14	1,8	24,4	35,4	49,5
15[x]	16,0	50,7	20,4	17,5

Source: Census 1960

[x]In 1960 Kanaleneiland and Overvecht were still mainly rural areas.

7. Try to explain the division between the living- and the working-place of the occupied population.
8. Which districts have a large (more then 40%) "secondary" population, which a "tertiary" and which a "quaternary"?
9. Which districts have a balanced division?
10. Shade in with the same colour on the diagram districts with a similar occupational structure.
11. What do you notice about the site of the districts with a"secondar " population?

6.6. *On the evaluation phase*

It has been pointed out earlier, that evaluation of instructional materials and of the process of their design takes place on the basis of:

1. Continuous process evaluation during all the design phases;
2. tests in the actual school practice when students are working with the instructional materials designed.

The very character of evaluation makes it rather senseless te reproduce any test questions in this context as an illustration of the evaluation phase: firstly, because test results only provide us with a basis for evalu tion and secondly, because test questions can only be properly understood if they are seen in relation to objectives and instructional materials.

7. Conflicts in Land-use in Eastern South Holland
(An example of a geographical information unit)

7.1. *An introduction to the example*

In the final section we provide an example of a geographical information unit developed along the patterns provided by the conceptual processing model. The ultimate presentation is as a tape-slide program.

The unit 'Conflicts in land-use in Eastern/South Holland' has been designed at the request of the provincial planning authorities in the Hague (PRRO- The Council of the Province of South Holland for Physical Planning). The objective was to provide background geographical information to the participants engaged in the preparation of a regional plan for the eastern part of the province of South Holland. Thus the participants could better read the planning documents. The unit has functioned quite well.

Pretty soon after the first discussion evenings in the region's schools (vocational and secondary type), we were asked for the unit for use in the geography and in the social science lessons in such schools. So it is now at hand in the same form (textual and visual) for the teachers.

Together with the audio-visual document there is a booklet with the spoken commentary and an introduction for the teacher (detailing objectives, suggestions for use etc.).

After an introduction in a conference in Western Germany we also received requests for the tape-slide program in German (to be used in planning seminars in University Geographical Institutes). So there exists now in addition to Dutch and English also a German version of this geographical information unit.

In the following pages you will find a copy of the booklet.

7.2. CONFLICTS IN LAND - USE IN EASTERN SOUTH - HOLLAND

Visual and textual information
of a tape-slides program
with
. introductional remarks about
design and content of the program
. a summary of the learning
objectives
. suggestions for use.

Department of Human Geography for
Education and Information-transfer,
Geographical Institute, State University, Utrecht

CONFLICTS IN LAND-USE IN EASTERN SOUTH-HOLLAND

Introductional remarks

This tape-slides program has been designed and realized on behalf of the citizen participation procedure that has been organized for the preparation of a regional plan for eastern South-Holland (1976). The audio-visual material consist of basic introductory information for the participating citizens about spatial planning and the regional plan concept.

Design of the program

- 43 slides: images true to nature and images to structure (pictures, maps etc.), diagrams, graphs, text-slides.
- 13 minutes' audio-tape.

The content has been structured very throughly from our information-geographical point of view. The visual and auditive information together form one undivided source of knowledge. Therefore it appeared to be possible to give the participants a basic insight in the spatial problems of the Randstad and the main ideas included in the regional plan concept, within a time limit of 13 minutes.

Summary of the content:

slides 3-10	: spatial consequences of the population development in the Randstad Holland during the last 100 years.
slides 11-26	: spatial consequences of the demand for a better quality of living (suburbanization, urban renewal).
slides 27-38	: the increased pressure on the Green Heart of the Randstad, competition for land amongst the diverse space-consuming functions (living, working, recreation, communication), and the resulting need for spatial organization.
slides 39-43	: "Alternatieven en Varianten", several alternatives

for the regional plan of eastern South-Holland, developed by the provincial government. These alternatives are the basis for the citizen participation procedure.

Objectives

For the following reasons we offer this tape-slides program to schools in its original form. In our (western) democratic societies all adults share responsibility for the optimal functioning of society.
Responsible spatial planning is an integral part of the process of creating an optimally functioning society, because "space" is a "scarce commodity".
Therefore our students - the adults of future society - should be offered the opportunity to gain insight in the problems of spatial organization. For that purpose examples gathered from reality should be preferred as compared to constructed thus non-existing situations.

This tape-slides program is a part of an instructional system that will also include a workbook about the subject matter and a simulation-game, based on the process and the results of real participation procedure for the regional plan in eastern South-Holland.
Workbook and simulation-game are now being developed.

The learning objectives of the instructional system (not yet stated in behavioral terms) are the following:
The students should

a. gain insight in the existing spatial structure of the Randstad and the processes influencing its spatial organization;
b. understand that man is the creating force in the development of the existing structures and processes;
c. realize that all man's space-consuming activities (living, working, recreation, communication) are competing with each other, because the available space is scarce;
d. see the necessity of government intervention by means of regional planning in order to create a well-balanced use of the scarce space;
e. realize that the constantly changing values regarding prosperity,

well-being, natural environment, economic growth, etc. influence government policy as well as individual behaviour;

f. understand that through participation individuals and groups can influence government policy in a well-functioning democracy;

g. be able and willing to evaluate regional planning on the basis of the above mentioned knowledge and insights;

h. know which possibilities and responsibilities he/she has as a democratic citizen to influence regional policy.

On the one hand there is a need for information about regional planning on the other hand the tape-slides program "Conflicts in Land-use in eastern South-Holland" can be applied as a separate unit in learning situations, if suggestions for use are added.

Therefore we think that it is appropriate to present the tape-slides program although that other parts (workbook and simulation-game) have not yet been finished.

Target group:

Students in secondary education (age: 14-16). The topic can be studied in the school subjects geography and social studies.

Suggestions for use

a. As an introduction the eastern part of the province South-Holland can be studied to some more detail as a part of the Randstad and of the Netherlands as a whole. For this purpose an atlas should be used and the following points can be discussed:
   1. the leading position of the western parts of the Netherlands - nowadays as well as in the past -, and the resulting development of the port- and trade-centers of Rotterdam and Amsterdam, of the government-center of the Hague and of Utrecht's central functions;
   2. the development of the characteristics spatial form of the Randstad also with attention to the physical geographical situation of the area.

b. After the presentation of the program attention could be given to the social, political and economic processes causing the pressure on the Green heart. Once started systematically, the results of this

study can be compared to processes taking place in other areas.

We shall be glad to discuss your suggestions for improvement of the program.

Facultymembers of the Department of
Human Geography for Education and
Information-transfer:

Drs. Hein Hoitink
Drs. Godelief Verschuren
(research staff-members)
in cooperation with
Dr. Henriëtte Verduin-Muller
Drs. Rob van der Vaart

Utrecht, February 1977.

Geographical Institute, State University, Utrecht
Heidelberglaan 2, Utrecht, The Netherlands,
Department of Human Geography for Education and Information-transfer.

Visual Information (slides)	Textual information (audio-tape)
"Conflicts in Land-use in eastern South-Holland"	
1. Title of the program	-
2. Producer of the program	-
3. Satel ite picture western part the Netherlands	The Western part of the Netherlands is one of the most densely populated parts of Europe. Here the population is concentrated in one large urban area known as the Randstad.
4. Map, showing urban wings	The Randstad has two wings: the northern and the southern. The northern wing includes the cities of Haarlem, Amsterdam, Hilversum and Utrecht. In the southern wing you will find the cities of Leyden, The Hague, Rotterdam and Dordrecht. The non-urban space between the two wings is called the Green Heart.
5. Map, showing built-up areas 1850	Over one hundred years ago, the cities in the western part of Holland were small.
6. Map, showing built-up areas 1900	By 1900, the cities started to grow as the population expanded and the economy developed. Job opportunities in the cities attracted people from the countryside.

Visual information (slides)	Textual information (audio-tape)
7. Map, showing built-up areas 1950	By 1950, the present shape of the Randstad became evident, as the intervening municipalities also started to grow.
8. Map, showing built-up areas 1980	It is expected that the Randstad will look like this by 1980, if the development continues at the present rate.
9. The maps 5-8 combined	As we have seen, a number of relatively small towns and cities, that were spatially separated, developed into one large urban area during the last hundred years.
10. Graph, showing population development 4 larger cities	In the sixties, the number of inhabitants of the four larger cities started to decrease.
11. Old dwelling, Amsterdam	The hazards and discomforts of old dwellings form one reason for the migration from the cities.
12. Large scale-construction, Amsterdam	Numerous homes have been removed because of largescale construction, including an underground railway, offices, hotels and public buildings. This is a second reason for population decrease in the larger cities.
13. Renovation project, Amsterdam	In other places old dwellings have been demolished and are being replaced by new ones. These new houses are larger than the older ones, so more livingspace is available per family. They are built

Visual information (slides)	Textual information (audio-tape)
	much further apart. In this way, fewer people can live on the same space.
14. 19th century neighbourhood	The lack of greenery and also space available for children to play safely make living in the city less attractive. This is particularly true for the nineteenth century neighbourhoods.
15. Traffic jam, Amsterdam	Finally, the livability of the city is reduced by heavy traffic causing noise and air pollution. In addition there is very little consideration for bicyclists and pedestrians.
16. New apartment building, Utrecht	As a result of these factors, new apartment buildings on the edge of the cities are attracting a number of people from the old city centers.
17. Map showing directions of overflow from Randstad	Other people leaving the city centers are moving to the settlements and towns in the countryside. Not only are the settlements in the Green Heart of the Randstad beginning to grow, but so are those in the countryside of North-Holland, Gelderland and North-Brabant.
18. Single-family dwellings, Woubrugge	One of the advantages of living in the Green Heart is the comfort of single-family dwellings like these in Woubrugge in eastern South-Holland.

Visual information (slides)	Textual information (audio-tape)
19. Greenery, Woubrugge	In contrast to what the city offers, these houses have gardens and are situated among green surroundings.
20. Quiet streets, Woubrugge	There is sufficient opportunity for children to play savely.
21. Play ground, Woubrugge	There is little traffic in the streets to cause noise and air pollution.
22. Written information, showing reasons for migration from the cities	The migration form the cities was made possible by the increasing prosperity in the sixties. By then people were able to buy homes and later on, the attractiveness of living in the countryside was increased by the ease of automobile travel.
23. Map, showing accessibility major cities in traveltime	From the colored area on this map, anyone can reach the center of each of the four large cities via a main road within half an hour by car. Yet only a small part of the area is white. As the roads are improved, distances can be covered faster. In that way, the white area is becoming smaller and smaller.
24. Written information, showing groups leaving the cities	Young families with children and people with higher incomes, especially, are leaving the city. The elderly and those with lower incomes are forced to remain.
25. Historical section of Amsterdam	On the other hand, people with very high incomes are remaining in the city. The historical sections are a real attraction.

Visual information (slides)	Textual information (audio-tape)
	Frequently, this group of people has a second dwelling in the countryside.
26. Industrial company in Open Middle-area	Companies and institutions are also settling in the Open Middle-area. It is easy to reach and the prices of land is relatively low.
27. Graph, showing average annual population - growth/decline	Population increase in the countryside, as shown in orange, is due to this migration of citydwellers to the countryside. However, as represented by the blue color, in the city-ring the population growth is slowing down, and since 1970 there is a population decrease in the city-ring.
28. Written information, summarizing competitions for land	With the growth of the population of eastern South-Holland, the pressure on the Open Middle area is growing. Since all forms of land-use require space, there is much competition for land among housing, employment, communication, agriculture and horticulture, natural environment and recreation. All this is further complicated by the fact that one form of land-use may cause other uses. In this way, living without traffic is impossible.
29. Housing development, eastern South-Holland	Housing More and more houses are being built. They require land, especially land being used by agriculture and horticulture.

Visual information (slides)	Textual information (audio-tape)
30. Modern industrial buildings, eastern South-Holland	Employment New companies which settle in eastern South Holland construct buildings that are often one story high. This also requires extra space.
31. Road, intensily used by commuters, eastern South-Holland	Communication The demands of increased commuter traffic result in the construction or widening of roadways, again taking more space.
32. Agriculture and horticulture, eastern South-Holland	Agriculture and horticulture The agrarian sector is the oldest and most important form of land-use in eastern South-Holland. Agriculture however has to give up more and more land to the other uses.
33. Riverside vegetation, eastern South-Holland	Environment and landscape In the course of time, both the environment and the landscape have suffered from the construction of new living quarters, roads, industrial sites, and areas for intensive recreation.
34. Yacht-harbour, eastern South-Holland	Recreation The need for space to serve recreational needs is increasing. Yacht-harbours are being constructed. The lakes are used intensively and the parks are growing in number and extent.

Visual information (slides)	Textual information (audio-tape)
35. Diagram, showing conflicting interests	All these forms of land-use are competing with each other. In this way a complicated situation of competing interests arises. Till now, the lower three interests were inferior to the upper three. It is the task of the government to counter-balance all these interests and to establish a spatial policy.
36. Written information, showing priorities of provincial governments	Just like the national government, the provincial governers want to keep eastern South-Holland free of extensive development. The Green Heart has to stay green.
37. Written information, showing provincial government's priority	The provincial government supports the interests of the natural environment, agriculture and horticulture and recreation.
38. Written information, showing limitations imposed by provincial government	The provincial government, therefore, wants to limit growth in the number of houses, the use of the automobile, and the development of particular industries. Moreover, it is stimulating the service sector.
39. Survey report	From this viewpoint, the provincial deputees have investigated a number of possibilities for the future spatial development of eastern South-Holland. This survey has resulted in several alternatives, which are described in the

Visual information (slides)	Textual information (audio-tape)
	report "Alternatieven en Varianten".
40. Map, showing Alternative A-D	The first alternative is "A-D". In it, the present migration form the Randstad to eastern South-Holland is stopped. The small settlements are not permitted to grow further. The natural growth of population has to be directed to Alphen, Gouda and Gorkum. Medium-sized cities like Leerdam, Schoonhoven and Bodegraven would be allowed to absorb their own population growth. Besides these matters, this alternative safeguards nature and landscape. Alternative A-D is similar to alternative F; the difference is that F has some overspill from western South-Holland to Gouda and Alphen.
41. Map, showing alternative B-E	In alternative B-E, every settlement, big or small, is allowed to absorb its own population growth. In this way, the growth is spread out over all of eastern South-Holland. Alphen, Gouda and Gorkum will grow less than in the preceding alternative. Also in this plan, the overspill from the Randstad is opposed. Besides that, this plan gives agriculture good opportunities to intensify.
42. Map showing alternative C	The last alternative is "C". Here population growth also is spread out. Moreover, in this alternative, overspill from

Visual information (slides)	Textual information (audio-tape)
	western South-Holland is allowed. The population has to be totally absorbed in Alphen and Gouda. These cities will grow very rapidly. This alternative offers good development opportunities to agriculture.
43. Written information, stating alternatives relevant for regional plan	The provincial governors have to choose one plan from the above described alternatives. In making this selection, also the results of citizen participation will be weighed. The alternative which is chosen will become the basis for the regional plan.

Utrecht, June, 1976.

8. A piece of history about the development of the processing model

8.1. *Introduction*

On the occasion of the 23th Congress of the International Geographical Union, Moscow, 1976 an exhibition on the Randstad Holland was designed and realized by Drs. Henk Meyer, manager of the Information and Documentation Centre for the Geography of the Netherlands in cooperation with the Dept. of Human Geography for Education and Information Transfer and the Dept. of Applied Geography.
When preparing this exhibition in 1975, the designers made use of aspects of the processing model, that was being developed at the time.
As a methodological acknowledgement aspects of the underpinning process were postulated on a panel within the exhibition.
A number of theses on the process of designing geographical information were presented in a congress-paper (section III - Educational Geography).

8.2. *From the Moscow-theses (23th IGU, Congress, 1976)*

The Randstad example

As an illustration of our systematic and discipline-centred approach to the designing, conceptualization and disseminating geographical information, the Information and Documentation Centre for the Geography of the Netherlands, in cooperation with us, has conceptualized especially for this IGU-congress-section an exhibition of the Randstad. Before inviting you to observe and evaluate the exhibition I wish to present to you the rationale for the methodological aspects of the exhibition in terms of the informational geographica thought developed in these theses.

The Randstad Holland Exhibition, its methodological acknowledgement

Target group (entering behavior)	Non-dutch geographers, bearing some - mostly superficial - knowledge of the geography of the Netherlands
Objective	To provide insight into the use of space in the 'Randstad Holland'
Content	The Randstad Holland (the Green Heart Metropolis)
Specification of the content	The Randstad cities, the 'open space' between the cities; some surrounding areas undergoing the Randstad's direct influence
Specification of the objective	. to identify the Randstad as the most densely populated and economically most important part of the Netherlands . to identify forms of conflicting landuse in the Randstad and in the 'open space' . to compare the Randstad with urban concentration zones in other countries
Conceptual framework	site/situation structure → historical development (functions) structure → present structure (functions) ↓ processes → interweaving of different forms of ↓ landuse → leading to conflicting situations measures in the field of physical planning/ future developments
Media	non-projected means of expression (text, maps, photographs, diagrams) developed, and made resp. selected on the basis of its potential for implementing the stated objective
Display	an arrangement of the means of expression on the panels along the lines of the conceptualized framework with a notion of the aesthetical principles of material designing.

A co-production of:

- *The Information and Documentation Centre for the Geography of the Netherlands, Utrecht*
- *The Ministry of Education and Science, The Hague*
- *The Ministry of Foreign Affairs, The Hague*
- *The Department of Human Geography for Education and Information Transfer of the Geographical Institute of the State University, Utrecht*
- *The Deparment of Applied Geography of the Geographical Institute of the State University, Utrecht*

With assistance of:

- *The Drawing-, Photo-, and Reproduction Department of the Geographical Institute, Utrecht*
- *The Foundation Film and Science, Utrecht, for graphic design and mounting of visual material*

NOTES

1. P. Meredith: "Information Systems and Systematic Information" in The Journal of Education Science, 1968, p.79:

   "Since every educator, whether he knows it or not, is, by nature of his profession, an information scientist, we shall not begin to make headway with a science of education untill these craftsman begin to analyse the stuff with which they do their daily work".

2. R.B.McNee: "Does geography have a structure? Can it be "discovered"? The case of The High School Geography Project". In R.J. Chorley: Directions in Geography, London, 1970, p. 285-313.

   A.M.Gunn c.s.: "High School Geography Project, An analysis of the H.S.G.P. in relation to new developments in geographic education worldwide". I.G.U.-congress, Canada 1972. p.25-50.

   N.J.Graves: "Geography in Education", London, 1975, p.59.

3. In this context, see i.e.: J.Engel: "Das Highschool Geography Project, ein Modell für ein Deutsches Forschungsprojekt". In: Tagungsbericht und wissenschaftliche Abhandlungen, Deutscher Geographentag Kassel 1973, Wiesbaden, 1974. p.170-180.

4. H.S.Verduin-Muller: "Theses on designing and dissemination of geographical Knowledge (nr.5)". 23rd I.G.U.-congress, Moscou, 1976, Geografisch Instituut, R.U. Utrecht.

5. W.D.Pattison: "The Four Traditions of Geography", in The Journal of Geography, 1964, p.211-216.

6. P.Meredith: "Information Systems and Systematic Information", in The Journal of Education Science, 1968, p.81.

   H.Seiffert: "Information über die Information", München, 1968, p.26.

7. H.Seiffert: "Information über die Information", München, 1968, p.28-30.

8. P.Sztompka: "System and Function" (part 1, Formal Framework for Theory Construction), New York, 1974.

9. N.Helburn: "The Development Process", in From Geographic Discipline to Inquiring Student (Final Report on the H.S.G.P.), 197[illegible], p.35.

10. N.Helburn, p.34.

11. N.Helburn, p.39.

Lessons

For those who venture into the dimly lit corridors of curriculum reform, we offer the following:
1. Curriculum reform consistent with the best of both the discipline and the schools is possible. Schoolmen have nothing against powerful and significant ideas. Academics have no valid objections to materials in highly techable form.
2. Real curriculum reform is neither easy nor cheap. It takes more time and devotion than anyone on the outside can understand to write good material that *anyone* can teach.
3. The inertia is enormous. People's images as well as their behavior change slowly, if at all. Any one effort should focus its energies on the parts of the system it really hopes to change.

4. While we know a good deal about the ingredients of curriculum from learning theory, theory of instruction, and curriculum theory, we have no recipes for putting them together. Curriculum writing is an art form which involves creative synthesis. Identifying error and correcting it distinguishes good projects from mediocre ones. As wide a range of imaginative people as possible should be drawn upon. A small group should edit toward a consistent whole.
5. Ends and means are inseparable. Content and process are both integral to school learning. Every activity has multiple objectives. Vested interests and sacred cows, both of the discipline and of education, must be dealt with summarily.
6. The extrinsic reward system of higher education discourages scholars from participating in curriculum development. The intrinsic rewards are so great that for many it does not take much experience before they are "hooked".

12. R.Geipel c.s.: "Wege zu veränderten Bildungszielen im Schulfach 'Erdkunde'", Studientagung, Tutzing, 1971, Stuttgart, 1971.

    R.Geipel c.s.: "Das Raumwissenschaftliche Curriculum-Forschungs-Projekt, Ergebnisse einer Tagung", Tutzing, 1975, Stuttgart, 1975.

13. H.Hendinger und G.Hoffmann, Hauptprobleme der Unterrichts-Entwicklung, in Probleme und Verjahren der Curriculumentwicklung im RCFP. Arbeitsbericht über die Jahrestagung des RCFP, Goslar, vom 1-5 März, 1976, München, 1976. p.31.

14. J.Rolfe, N.Grenyer, A.Kent: "The Oxford Geography Project", special: "The Rationale Behind the Project", in Teaching Geography, April 1975.

15. See f.ex. Teachers'Guide, Cities and people, GYSL. Schools Council, 1974.

    See also: The Town and Country Planning Associations GYSL-special issue. London, May 1975, 28 pages.

16. G.Hickman, J.Reynolds, H.Tollay, A new professionalism for a changing geography, Schools Council, 1973.

17. Curriculum design and development course team of the Open University: "Portrait of a national project", part 3, Geography 14-8. Milton Keynes, 1976.

18. Portrait of a national project etc, project documents, p.7.
    a The production of exemplar curriculum material
    For the purpose of this paper, what matters are the criteria underlying the selection and structuring of materials. Briefly, these are:
    i that they illustrate key themes, problems and concepts in geographical thought, bringing out changing interpretations and orientations together with the worthwhile in older ideas and methods;
    ii that they clarify the role and importance of particular techniques and methodologies within a wider theoretical and philosophical framework;
    iii that they entail bringing familiar but key concepts such as 'environment', 'action', 'cultural change' and 'rationality' into consciousness, so that enhanced understanding of these concepts may inform the student's understanding;
    iv that, while presenting a clear logical framework of ideas, they lend themselves to flexible classroom use and to divergence of student interests in individual enquiry. The materials, for example, should present clear concepts, constructs, techniques, etc., but should also indicate how their meaning and application can be explored in a variety of contexts.

19. Alan Blyth c.s., Curriculum planning in history, geography and social science, Place, Time and Society 8-13, Schools Council, 1976, p.91-110.

20. Geography 16-19 Curriculum Development, The framework Teaching Units, in Project News, nr.4, 1977 University of London, Institute of Education.

21. H.S.Verduin-Muller: "Leren met Beelden", diss., Groningen, 1964.

22. For example
Tanner & Tanner, "Curriculum Development", New York, 1975.
(Specially in the chapters 2 and 4 the writers are dealing with the developments).

H.M.Kliebard, Curriculum Theory: Give Me a "For Instance" in Curriculum Inquiry, 6/4 1977, p. 264/265.

W.Schöler, Geschichte des naturwissenschaftlichen Unterrichts, im 17. bis 19. Jahrhundert, Berlin, 1970 (chapters IV & VIII).

23. D.K.Wheeler: "Curriculum Process", London, 1970. We have chosen for the figure as sketched by Wheeler in his "Curriculum Process".

H. Taba, Curriculum Development: theory and practice, New York, 1962.

N. Graves, Geography in Education, London, 1977, p. 100- p.112
(see especially p. 105, Tyler's model of the curriculum process).

24. R.M.Gagné, L.J.Briggs: "Principles of Instructional Design", New York, 1974, Chapter 11: Designing Instructional Systems.

25. J.E.Kemp: "Instructional Design", Belmont (Cal.), 1972. (see specially Part 1 and Part 2, p.3-81).

26. The projects are mentioned by code.nr.,by name, period, incl. participating students. Most projects are undertaken on request, if this is the case, the institution is also mentioned (after the projects' name)

1. 'On European Population', Council of Europe (in cooperation with France and Western Germany), jan. 1975- ;
Ruud van Dongen, Marian Groenevelt, Henk van den Heuvel, Ton Hoozemans, Liesbeth van Omme.

2. Landconsolidation in the River District,Land Division of the Ministry of Agriculture, jan. 1975 - april 1978
Hans van Dinther, Leni Greeve, Wim Hassing, Ellen Röst, Ton Verheyden, Godelief Verschuren.

3. 'Mekong-Valley-Project', Oct. 1974-febr.1976
Jan Franke, Huub Kasbergen, Martin van 't Klooster.

5. 'The Third World and the Western World', Peace Corps The Netherlands, jan.1975-March 1976;
Marian Camfferman, Henk Ester, Fons van Kruchten, Wim Röst, René Sanders, René Vleugels.

6. 'Maghreb'-project, Ministry for Education and Science, Jan. 1977-March 1978.
Martin Bierens, Jan van Doggenaar, Maarten van den End, Piet van Holsteyn, Dries van Ingen, Wouter Kaas, Peter Knoester, Frits van der Leye.

7. 'Luxemburg'-project (Social Geography), Jan.1976-March 1977;
Ad Baayens, Marion Denessen, Willy Klok, Aad Lindhout, Elly van Schieveen, Ans de Waardt.

8. I. 'Vlaardingen'-project, Town Council, sept.1975- dec. 1976;
Wim van den Ende, Truus Hilkens, Clementine Peyster, Hans van Scherpenzeel, Nelleke van Vliet.
II. 'Participation-Projekt Randstad-1', Prov.Council for Spatial Planning, Jan. 1976-Dec. 1977, two research-staff members; no students.

9. '200-years Labour Market in Utrecht', Dutch Society for Industry and Trade, Jan.1977-March 1978;
Paul van den Boorn, Jan Kolkman, Winfried van Leeuwen.

10. 'Eindhoven'-project, Agglomeration Council, jan. 1977-april 1978;
Marcel Bayens, Jan van Buul, Hans Dekker, Miek Hoogbergen.

11. 'Haaften'-project, jan. 1977- april 1978;
Bets Lasseur, Maarten Hartman, Gert Heuveling, Rob Veldhuizen.

'Participation-Projekt-Randstad-2', Commission on the Modernization of the Geography Curriculum/Foundation for Curriculum Development, July 1977- two research staff-members; since jan. 1978 participation of the students: Jan Beyer and Nelly Lemmens.

Since jan. 1978 two new project are undertaken:

10. II. 'Eindhoven'-II , Agglomeration Council;
Liesbeth Heintzberger, Wim Otten, Ron Smit, Marian Weusink, Gerrit Worm.

12. 'London'-project; Joep Kranenburg, Els van de Wolfshaar.

27. B.S. Bloom, c.s. Taxonomy of Educational Objectives, Cognitive Domain, London, 1956.

D.R. Kratwohl, c.s. Taxonomy of Educational Objectives, Affective Domain, London, 1964.

Some educational geographers who paid special attention to the application of the objectives'taxonomy are listed here:

T. Bennetts, "Objectives" in R. Walford, c.s. New Directions in Geography Teaching, London, 1973, p.152-174.

N.J. Graves, Geography in Education, London, 1977, p. 78-99.

D. Hall, Geography and the Geography Teacher, 1976, p. 72 en p. 74.

N. Helburn, The Educational objectives of High School Geography, in The Journal of Geography, May 1968, p. 274-281.

W.E. Marsden, Evaluating the Geography Curriculum, Edinburgh, 1976, p. 9-46.

J.C. van Westrhenen, Aardrijkskundige Onderwijsdoelen, Amsterdam, 1976 (esp. Chapter IX)

THE GEOGRAPHICAL INFORMATION EDUCATIONIST,

THE WHY, WHAT AND WHO OF A NEW PROFESSION

International Geographical Union
Regional Conference
Nigeria, July/August 1978

Paper: Commission nr. 3
"Geographical Education"

Dr. Henriëtte Verduin-Muller
in cooperation with
Drs. Rob van der Vaart

Geographical Institute,
Rijksuniversiteit Utrecht,
The Netherlands.

Department: Human Geography
for Education and Information-
Transfer, April 1978

THE GEOGRAPHICAL INFORMATION EDUCATIONIST - THE WHY, WHAT AND WHO OF A NEW PROFESSION

	page
Introduction	3 - 2
1. On the changing educational scene	3 - 3
2. On the changing function of educational geography: the humanistic outlook	3 - 6
3. The need for high standard geographical units: who is doing the job?	3 - 8
4. The geographical information educationist:	3 - 10
4.1. Introduction	3 - 10
4.2. On the methodological and material aspects of the work of a geographical information educationist	3 - 10
4.3. The profile of a geographical information educationist	3 - 13
5. An appropriate time-table for the education and training of the geographical information educationist in relation to the profile outlined above	3 - 16
6. Conclusions and recommendations	3 - 17
Notes	3 - 19

Introduction

This paper advocates a new professional outlook in geographical education, which in the long term could turn out to be a fundamental one for geography in the broad field of education.
I am grateful for the opportunity of introducing this view in a dynamic country like Nigeria. It is particularly in such countries that impulses for new developments and renewal of established ideas will get a real chance.

1. On the changing educational scene

The content and the form of education (formal and informal) is a source of great interest throughout the world. And no wonder, for if a humanistic emancipatory view of education is taken, it provides people with the ability to function adequately in society. Whether people can maintain and fulfil themselves in social and economic life in accordance with their potential depends on a whole series of factors.

Reinforcing the literature on this theme we would argue that an intellectual and emotional grasp of a coherent unity of skills, knowledge, concepts, and attitudes, values and beliefs provides a prerequisite condition for adequate functioning in society.

Thus it is necessary for the discipline with which we are concerned, i.e. geography, or a cluster of human and social disciplines, to develop the necessary instrumentation to fulfil these aims. To achieve these aims support must be sought from educational sciences.

The need for educational information will now be sketched in broad terms. We do neglect the past. In our overall outlook we pay more attention to the present and the future. Similarly, because education in the western and non-western worlds differ so much, at least in relation to organisational structures, we need to make distinctions between the two worlds. First we will direct our attention to the western world, then to the non-western. But this sequence does not represent any priority of importance.

The western world is growing in emphasis as a post-industrial service society. Among its characteristics are a great variety of types of work; an increase of leisure time; an increase in inter-regional contacts; internal democratisation; and an emphasis on education as a means of "learning to be" (titel of a UNESCO report, 1972).
All these have distinct and formal consequences for education. In addition, education itself is undergoing a change in function and

style, becoming more emancipatory, having outgrown both qualitatively and quantitatively traditional formal education to the age of 18. Expository learning remains necessary for certain purposes, but is given less priority. Discovery learning, and the structuring of learning in curriculum units using information and documentation material, so essential for both social and mental development, is stimulated. Education is no longer confined to school and a particular age group. Social and economic change demand new types and forms of education. These may well allow the realization of educational aims outside the traditional day-school through, for example, second-chance education, life-long education or recurrent education.
Information is being disseminated to increasingly broad sections of the population in comparison with the past. As part of the democratization process, for example, the opportunity for all groups of people to participate in physical planning at different levels is a highly significant development. For this to be properly undertaken, a much broader education base in the lay population is required.

In the non-western world there are particular educational needs, such as the elimination of illiteracy and expansion of all types of continuing education. An extension of the influence of the formal institution, the school, seems to be wanted less and in some regions is not given precedence. In such areas, schools tend to become urban or suburban, compelling migration from rural areas. In practice, there is no re-migration after the completion of schooling. Thus more and more reliance has to be placed om local educational initiatives.
Educational information dissemination is of essential importance. This is especially true of innovative information, whose function it is to familiarise the population with changing situations, such as those connected with the execution of new physical projects. In addition to school, the peripatetic teacher and information officer, the use of mass-media (education by radio in Thailand and many Latin American countries: education by satellite in India and West Africa) contributes to this task. An inadequately developed infra-structure makes more necessary the use of mass-media and non-terrestrial bound communication channels such as satellites, at least for a start to be made in the

solution of such problems of educational dispersal.

In this light, we can say that in both these worlds the significance of the traditional role of teachers, tutors and information officers as purveyors of knowledge diminishes, and the more progressive function of creative companions of the learning process increases. This process has to be supported by the provision of structured and theoretically underpinned curriculum units, in our case geographical ones.

Within this changing educational scene, the objectives of education, including the geographical, are changing. We already mentioned the more emancipatory function of education. In this respect geography as an explanation of physical- and social-spatial events has a special contribution. We now will refer to this humanistic emancipatory outlook of geographical education.

2. On the changing function of geography in education: the humanistic outlook

The aims of geography as a subject were until recently typically nationalistic or even chauvinistic. From country to country statements of aims could differ considerably. If the aims were not made explicit, as was the situation in most cases, they could be deduced from the nature of the curriculum and from the curriculum content, as might be found in geographical textbooks.

It can be argued that the nature and practise of the university discipline of geography were leading influences on school geography. Until well into the sixties, school geography was largely made up of a painstaking description of countries and their regions, that is, a regional geography framework. Within regional geography different countries set their own accents: in Germany, often a romantic view of landscape; in the United Kingdom, an emphasis on local fieldwork; and in the U.S.A. on gaining insights into the diversity and unity of a vast country. In Dutch geographical education, physical planning was an early topic.

With the increase in mutual contacts between colleagues at a national and an international level, through books and articles, conferences (papers, scholarships, sabbatical leave) and so on, discussion about the dicipline has increased, and has included discussion about the function of geography as a school subject.
Thus the quantitative paradigm in university geography has had considerable influence on geographical education. The American High School Geography Project has also had far reaching consequences for geography teaching through the world[1)]. In particular we would mention its influence in Britain and West Germany. These influences are implicit in textbooks and work-books as well as explicit in projects[2)]. These developments can not be separated from developments in society, from social consciousness, from the growth of curriculum theory, and from general and special didactics. There is no space here, however,

to work out the complex interplay of these different factors.

After carefully weighing the social and educational contributions of geography in school and society on the one hand, and the possibilities and limitations of geography as a discipline on the other, we would formulate the aims of geographical education as follows[3].
We take the view that the aim of both formal and informal geographical education is that man should see himself in his relation to his immediate and distant environment. This relationship changes continuously. In order to be able to determine his social and existential position, man must be able to orient himself in his environment and to acquire insight into the changes which are taking place in it. On the one hand, man is part of an ordered environment by his own activities. Physical processes also cause changes independent of man. Thus a continuous reshaping occurs, either gradually or precipitately. It is the task of geography for education to make man thoroughly familiar with the existing physical-spatial and social-spatial structures as well as the genesis of these structures and with the processes especially those concerning spatial behaviour and behavior in space which influence them. As a consequence of the continuing spatial reordering man is constantly confronted during his lifetime with new relationships. The underlying aim is therefore that man can and dare venture independently to acquire insight into for him new spatial social relationships.

These aims reflect the dynamic character of the time with its rapid and radical socio-economic changes. We want to emphasise that in the attempt to realise these aims, there will be scope for the practice of Pattison's four "traditions" of geography, outlined in 1964 as a basis for discussing the potential input of the subject discipline into the American High School Geography Project: these were the "spatial tradition", the "area studies tradition", the "man-land tradition" and the "earthscience tradition"[4].

3. The need for high standard geographical information units. Who is doing the job?

Following the sections 1 and 2, about the changes in education and the explanitory function of geography respectively, we would postulate that in some way socio-relevant and scientifically "reliable" geographical information units should become available.

We want to emphasize that we have three aspects in mind when using the term "reliable":

- firstly, the structuring of the contents should be reliable: the structure must mirror the explanatory strength of the geographical discipline;
- secondly, the factual information in geographical units should be reliable: it must be in line with geographical research findings;
- and thirdly reliable as to the way in which the contents achieve their form. Thus form must support the content.

Such geographical units will have to be developed and must become available on a wide scale. As we have seen there is a great need for reliable educational units all over the world and geography can contribute in this context because of its significant explanatory and predictive function. Besides, communication possibilities, which are an essential condition for further extension of education, are expanding rapidly everywhere in the world. In this context we do not think only of more and better roads and facilities for ground transportation, but also of satellite communication, cable television and the like.

The questions now arise, who is going to develop and realize the geographical units? What will be his/her professional requirements? The developing and realizing of geographical units for formal and non-formal education is in our opinion the responsibility of a specially educated as well as trained geographer. We label him/her as a geographical information educationist.

So we think that geography as a discipline will have to incorporate into its field a new form of applied geography.

We insist on the term "information" because the geographical information educationist is putting "content in-formation" for the broad and continually expanding field of education[5]. We then also think of mass-medial communication. This type of unit has to be of high educational standard and should not be just a show of verbal or visual violence.

There seems to open up a wide field of new jobs at the quaternary level. A lot of work, as yet slumbering, is waiting for the geographical information educationist, eventually in cooperation with other social scientists. We just mention some societal trends in which he can and has to play a fundamental role, such as "intellectual" tourism, public participation of people in physical- and socio-spatial planning, and clarification in depth of cause and effect in the problems of minority-groups. Or, to put it in another way, living in harmony in the "global village" will only be possible on the basis of humanistic communication. Thus mutual knowledge, insight and understanding is a basic need.

Of course there are "geographical educators" who develop and realize geographical information units as stated above (in a great variety of working situations e.g. university projects, state projects, authors). Especially during the last ten years their number has been steadily growing. But the profession as such has, as far as we know, not yet been postulated. This seems logical, for only since we became more and more aware of the societal changes, the growing significance of educational sciences and the role of geography to understand the aspects of social economic changes we in principle are in a position to mark the new profession.

4. The geographical information educationist

4.1. Introduction

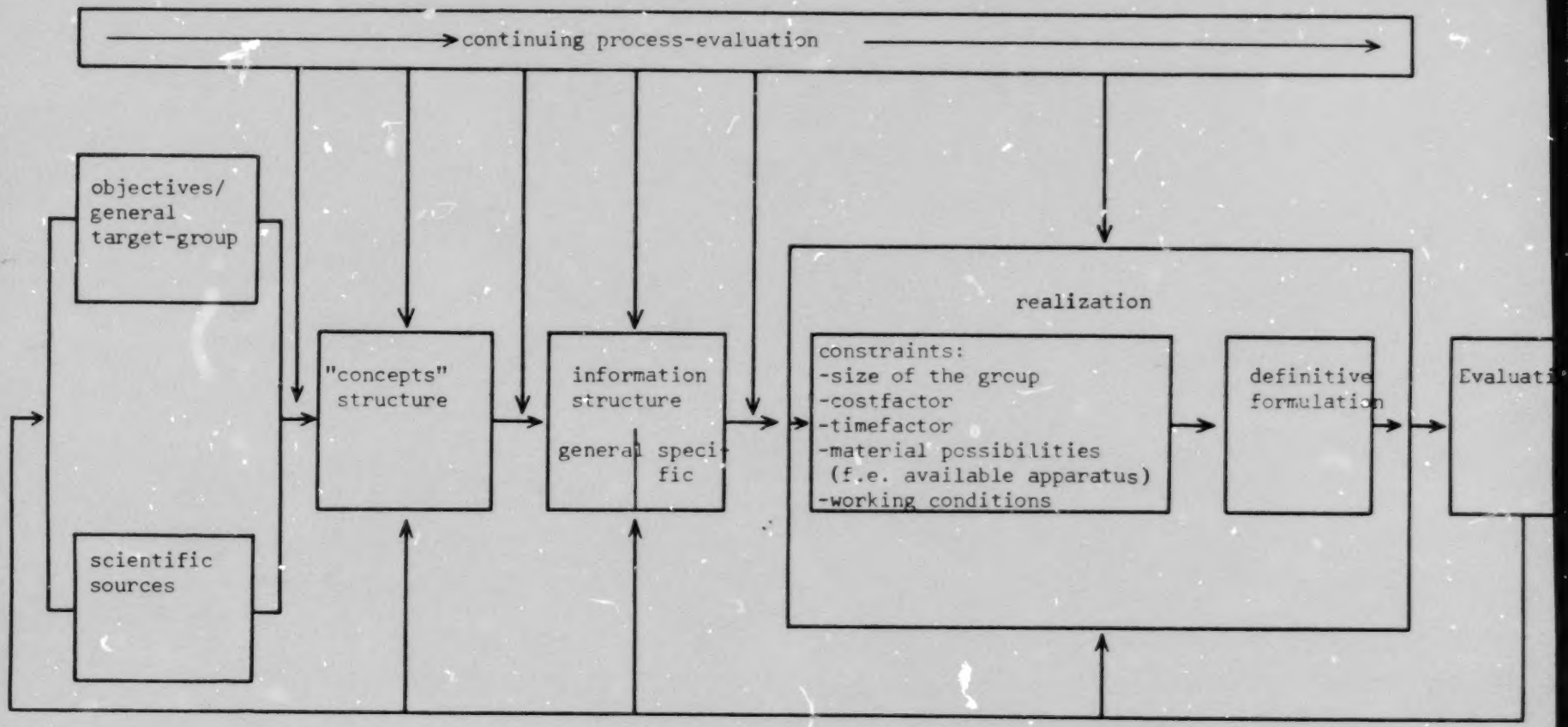
In this section we will sketch a profile of what we called a geographical information educationist. In order to do so we have to know as precisely as possible the work he is going to do. As an implication then the profile of a geographical information educationist can be postulated.
First we will pay attention to the methodological and the material aspects of the work, and after that to his profile.

4.2. The methodological and material aspects of the work of an information geographer

Since the actual work of a geographical information educationist will be to develop and realize information in geographical information units we must try to formulate the process leading to those units. Therefore we must look briefly at the geographical information method, developed and recently published by the staff of the Department of Human Geography for Education and Information Transfer of the Geographical Institute, Rijksuniversiteit, Utrechts, The Netherlands. The method, now with a model to hand, is developed on the base of research projects.
Departing from the broad educational function of geographical units as a product and from former research, a programme of requirements for the product was formulated as to content, form of the content and learning strategies. Having stipulated the essentials for the geographical information units in the sense of output, a hypothesis could be postulated for input and process to reach the formal defined output. The model given below is based on two generations of inquiry projects, in total ten investigations. In order to get a flexible insight into the methodological requirements we undertook projects on different geographical themes.
Figure 1 illustrates the model. This presents a view of the specific work which the geographical information educationist must undertake[6].

Fig. 1.

A conceptual model for the processing of geographical information for education.



© Geogr.Inst.
State University

Only three characteristics essential for the profile of the profession are emphasized here.

First, the model of the process has to be seen as a systems-concept, so each element is dependent for its significance on its place and function in the system as such. We emphasize that the model is not a loose composition of elements to be realized in a desirable order, but is, as a system, very strictly structured.

Second, developing a geographical information unit is a original process and not a matter of translating discipline outcomes. Use is made of the geography discipline under the strict conditions set by the objectives (see the start of the model). This is not always seen clearly. A reason might be that until recently geography was a kind of description of themes and regions for a certain goal. But with the growing analytical functions of geography as an explanation of socio-spatial events it will become clear that geographical information for formal and non-formal education cannot be a simple translation of the discipline.

The third characteristic we want to mention is the position of the media. The means of expression are separated from the communication channel. The view is taken that the different means of expression are primarily sources of knowledge, thus they should complement and not replace each other. So in its ultimate form the means of expression is really a means of optimizing the information (supposing that our choice was right). Thus we hope to avoid the content being presented essentially in a written, verbal form, as decorations with pictures, maps, sketches, tables, graphs, etc. merely for cosmetic effect. Especially if there is a need, as there is, for geographical information, then experience has taught us, that in order to get a quick output insufficient attention has been paid to the expression of the content.

Though one could elaborate on this geographical information method and the crucial points in its development, we will leave the model now and concentrate on the profile of the geographical information educationist.

4.3. The profile of a geographical information educationist (with some annotations)

Merely in outlining the profile of a geographical information educationist we are engaged in fundamental thinking about the information educational function of geography in a dynamic society. The profile to be given is based on experience with geographical information research students. Four elements can be distinguished:

- knowledge of the discipline of geography and of the educational and communicative sciences;
- knowledge of the geographical information processing method;
- theoretical and practical knowledge of operational research;
- ability to work cooperatively.

Each of the parts will here be given attention, though in the course of time the profile itself will be refined and completed.

- A geographical information educationist has to be a well educated geographer. Apart from basic knowledge as an introduction to his discipline, he has to understand thoroughly the theory of his discipline and the place of geography within the cluster of social sciences, so that he will have real insight into the frontiers and the possibilities of his discipline. The content of his geography has to give him a profound knowledge of and insight into the physical-geographic and social-geographic structure of the world as an entity.
  His additional knowledge and experience has to be more strictly related to his future professional activities. As we have seen in the previous section, when reflecting upon the model, the geographical information educationist will be able to develop units about his own region and in essence only about themes within his region (micro, meso, macro-scale). Thus his regional and thematic specific knowledge has to be aimed within the context of his own cultural region or country and to country and to be not only at the micro but also at the meso- or macro region.
  It is obvious that he should have some research experience in his home-region.

From the very begining he should be thoroughly acquainted with basic data sources of his discipline for analytical purposes.
As an indispensable subsidiary to his geographical discipline, the geographical information educationist should have knowledge and insight into those aspects of education and communication sciences which will be fundamental to his future work. This will consist of curriculum theory, pedagogic-didactic and andragogic-didactic knowledge and of the theory and means of communication. The geographical information educationist will need this knowledge while working in his field of specialisation and also make use of it in discussions with his scientific colleagues.

- We now need to discuss the required knowledge of the geographical information processing method. The geographical information educationist should have thorough knowledge of the method and functioning of the method and its functioning in research already carried out. So he must study the methods as well as its applications. Besides this he must be able to analyse existing units using the method as an instrument.

- As to his research qualities we would suggest that he must have a basic knowledge of general systems theory and operations research. He must carry out a full research project himself in cooperation with perhaps two or three colleagues. The given model (see 4.2.) provides the research design. As we have already stated, such a project will always originate around a theme area within his home region at the micro, meso or macro-scale. The geographical information educationist because of his affinity to his home-region and its socio-economic and cultural origans, is uniquely equipped to apply the geographical information method.

- The last aspect of the profile is concerned with his ability to communicate positively with other people. In the first place, it is important to realize that his work belongs to the service sector, the quaternary one, so he must be client-oriented. If he supports the humanistic emancipatory vision of his discipline this client-

orientation gets additional emphasis. Perhaps it is as well to say in this context that the client-orientation plus the humanistic emancipatory vision do not imply a soft-centred attitude to the discipline and to other people.

Secondly, he has to have a propensity for cooperation and a capacity to put this into practice. Thirdly he must have a well developed feeling of responsibility both for the quality of the output as well as for its dissimenation as such. And his attitude must be one of "putting his shoulder to the wheel" where necessary.

5. An appropriate time-table for the education and training of the geographical information educationist in relation to the profile outlined above

To some extent the time-table depends of course upon the prior knowledge of the student, but we consider that after finishing secondary education a further five years of study will be needed.
After one year of basic geographical education a further two years should be spent in specializing within geography. A further one year is necessary for the subsidiary study in the educational and communicative sciences. In his final and fifth year he will undertake his research project plus its evaluation in an actual communication context.
Needless to say, this programm can only be realized if use is made of modern educational methods.

6. Conclusions and recommendations

Conclusions

Concluding and summarizing we reiterate that there is all over the world a major need for reliable and especially human geographical explanatory information units. Those units have to be developed by a specially educated geographer whom we have labeled a geographical information educationist.

Since we have the feeling that the work to be done is of great urgency, we would not wait for more research findings and thus we have sketched a profile of a geographical information educationist.

Perhaps the naming of these new applied geographers is not particularly attractive. Probably in the future they will be called information geographers or educational geographers. The problem is that both professions: information geographers and educational geographers, already exist, and cover very distinct specialities.

We personally would like to see that the man or woman whom we named as a geographical information educationist would be termed an educational geographer, with education as postulated in its broad societal significance and not only limited to formal teaching. For clarity of the discussion we therefore intend to call him for the time being a geographical information educationist. We do hope that soon an elegant solution will be found for the accommodation of this type of applied geographer.

It is not by accident that this paper is given in the frame-work of the IGU-section on "Geographical Education". The ideas and work undertaken originate from geographical education research and activities which have been carried out since the late Fifties.

Recommendations

We would postulate that on the basis of the given profile the professional education of the geographical information educationist must be

initiated as soon as possible. This we feel is true for both the countries in the western world with its post-industrial society features, as well as for those of the non-western world, with its needs for formal and non-formal education on all levels.
It is of essential importance that people everywhere and at every time have an opportunity to understand the human and social-spatial structures the functions of the structures and the processes influencing the structures and its functions, of which they are part.

At the same time the resolution of UNESCO is taken into account as to the provision of information by the countries and regions concerned themselves and not by European and American information-centers.

And finally a wish,
I do hope that the Department of Geography of the Institute of Education of this University, the University of Ibadan, could be one of the first to start with fully accredited courses for the profession of geographical information educationists. We, be sure of this, will be happy if we could give any support.

NOTES

1) R.B. McNee: "Does geography have a structure? Can it be "discovered"? The case of the High School Geography Project." In R.J. Chorley: Directions in Geography, London, 1970, p. 285-313.

A.M. Gunn c.s.: "High School Geography Project, An analysis of the HSGP in relation to new developments in geographic education worldwide." IGU-congress, Canada 1972, p. 25-50.

N.J. Graves: "Geography in Education", London, 1975, p. 59.

2) In this context, see i.e.: J. Engel: "Das Highschool Geography Project, ein Modell für ein Deutsches Forschungsprojekt". In: Tagungsbericht und wissentschaftliche Abhand lungen, Deutscher Geographentag Kassel 1973, Wiesbaden, 1974, p. 170-180.

3) H.S. Verduin-Muller: Theses on designing and dissemination of geographical knowledge (nr.5). 23rd IGU-congress, Moscou, 1976, Geografisch Instituut, R.U.Utrecht.

4) W.D. Pattison: "The four Traditions of geography", in The Journal of geography, 1964, p. 211-216.

5) We borrowed the idea "in-formation" from P. Meredith's article: "Information Systems and Systematic Information", in The Journal of Education Science, 1968, p. 79-81.
See also: H. Seiffert: "Information über die Information", München, 1968, p. 26-30.

6) See for full information: H.S. Verduin-Muller: A Conceptual model for processing geographical information for education, Geographical Institute, Rijksuniversiteit, Utrecht, 1978, 63 p.
(The model can be forwarded to you on request.)

BREMER BEITRÄGE
ZUR
GEOGRAPHIE UND RAUMPLANUNG

HERAUSGEBER

GERHARD BAHRENBERG, HANS-KARL BARTH, EVA LEUZE, WOLFGANG TAUBMANN

Heft 2

Meere und Küstenräume, Häfen und Verkehr
Vorträge und Arbeitsberichte
17. Deutscher Schulgeographentag Bremen 1980

Herausgegeben von
Gerd Feller und Wolfgang Taubmann

1982

Schwerpunkt Geographie, Fachbereich 1

Universität Bremen

121

Henriëtte Verduin-Muller, Utrecht

Das Partizipations-Projekt Randstad-2, entwickelt am Utrechter Curriculum-Modell

Einleitung

Das Partizipationsprojekt Randstad-2, im folgenden als PPR-2 bezeichnet, ist ein geographisches Informationspaket über Raumgestaltung, Raumnutzung, Raumordnung und Bürgerbeteiligung bei der Lösung räumlicher Probleme. Die gesamte Materie soll am Beispiel der Randstad Holland und ihres grünen Herzens erläutert werden. Die Randstad Holland, im weiteren Verlauf dieses Beitrages als „Randstad" bezeichnet, ist der fast geschlossene Gürtel von Städten rund um das „Grüne Herz" in den westlichen Niederlanden, also der Bereich, der traditionell Holland genannt wird.

Beim PPR-2 handelt es sich um ein Projekt der „Geographie für Edukation", einer Abteilung innerhalb des Geographischen Instituts der Reichsuniversität Utrecht. Wenn wir auch im deutschen dem Namen „Geographie für Edukation" den Vorzug vor dem fast gleichzusetzenden Begriff „Geographie für Erziehung" geben, so liegt das in den Eigenheiten der niederländischen Sprache begründet. Hier sind innerhalb des Begriffes „Geografie voor educatie" sowohl die unter Schulerziehung zu fassenden Bereiche als auch die hierüber hinausgehenden wie Erwachsenenbildung oder informelle Edukation, z.B. Auskünfte über räumliche Probleme, Bildungstourismus usw., eingeschlossen.

Überdies und das ist für ein kleines Land nicht ganz unwichtig, ist der Begriff „Geografie voor educatie" international leichter erkennbar. Doch zurück zum PPR-2.

Zielgruppe des PPR-2 ist – und hier haben wir schon einige Schwierigkeiten, zu einer vergleichbaren Schulform zu kommen – die „Niedere Berufsschule" in den Niederlanden, der sogenannte „Lager Beroepsonderwijs", eine Schulform, die direkt auf die Ausbildung der 6-klassigen Primarstufe folgt und über ein breites Spektrum an Fächern verfügt. Der Fächerkanon erstreckt sich über den technischen Bereich, einfachen Verwaltungsdienst und Hauswirtschaft. Dabei ist seit den 50er Jahren in den Berufsschulen der Anteil der allgemeinbildenden Fächer zu Lasten der konkreten Berufsvorbereitung immer mehr in den Vordergrund gerückt worden, insbesondere die Gesellschaftswissenschaften und die Sprachen haben an Boden gewonnen.

Entstehung des PPR-2

Woher stammt nun das PPR-2, und wenn es ein PPR-1, worauf ja die 2 beim PPR-2 schon hindeutet, gibt, oder zumindest gegeben hat, was haben dann diese beiden Projekte miteinander zu tun?
Beim PPR-1 handelte es sich um ein Bürgerbeteiligungsprojekt im Rahmen des Regional-Plans Süd-Holland Ost, also eines Teils der niederländischen Provinz Süd-Holland. PPR-1 war ein Wissenschaftliches Projekt der Abteilung „Geographie für Edukation" und wurde unter der Leitung von Drs. Hein Hoitink und Fräulein Drs. Godelief Verschuren durchgeführt. Ziel dieser Untersuchung war es, Aussagekraft und Informationsgehalt spezieller für diesen Zweck angefertigter sozial-geographischer Informationen bei Anhörungsverfahren des Regionalplans für Süd-Holland Ost zu überprüfen. Später wurde auf Initiative der Behörden in Den Haag dieses Vorhaben auch auf die Regionalplanung in Sud-Holland West ausgedehnt.

Als Ergebnis dieser Untersuchungen war festzuhalten, daß derartige geographische Informationen für die an den Anhörungsverfahren Beteiligten sowohl behördlicherseits als auch bürgerseits aus den verschiedensten Gründen sehr geschätzt wurden. Als Zusammenfassung ließe sich in etwa sagen, daß die Verständigungsebenen wechselseitig besser wurden, da beide betroffenen Parteien mit Hilfe der Information begannen, für die wesentlichen Probleme räumlicher Art im gestellten gesellschaftlichen Rahmen mehr Verständnis aufzubringen und sich ebenfalls ein größeres wechselseitiges Mitspracherecht einzuräumen. Aus diesen Ergebnissen leitete sich die Frage ab, ob derartige Probleme der Mitsprache in räumlichen Prozessen als eine Art „Raum-

Für die Unterstützung bei der deutschsprachigen Schlußfassung bedanke ich mich bei Herrn Dr. phil. Michael Gamm, Institut für Geographie und ihre Didaktik, RWTH, Aachen

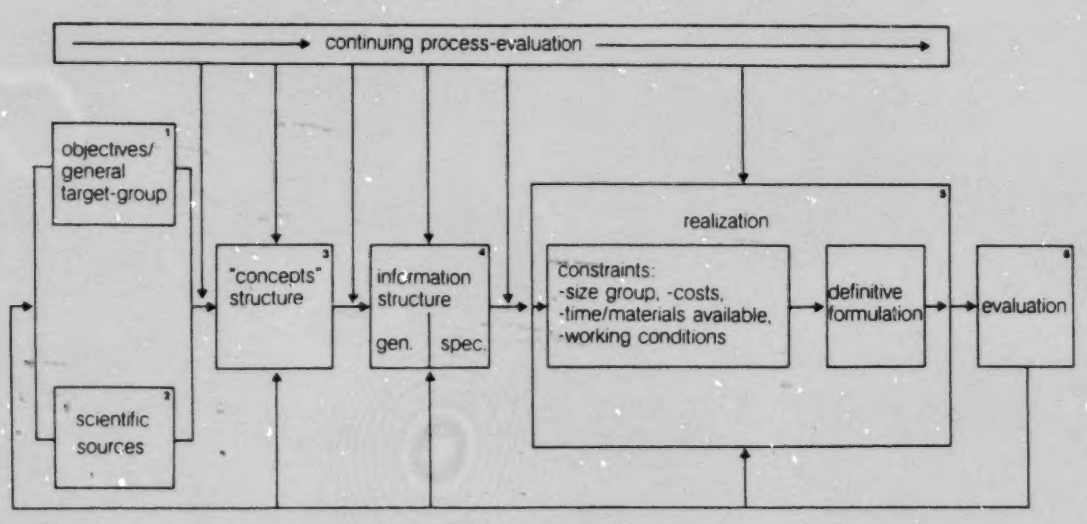
und Mitsprache-Bildung" nicht in das Schulcurriculum hineingehörten? Dies schien uns insbesondere dort sehr wichtig, wo die Soziale bzw. Anthropogeographie im Curriculum keinen oder zumindest einen sehr beschränkten Stellenwert hat und somit also die Behandlung derartiger Raum- und Mitsprache-Probleme wenig berücksichtigt wird oder ggf. ganz vernachlässigt werden muß; dies trifft in den Niederlanden besonders auf die Berufsschule zu.
Als sich dann die „Stiftung Curriculum Entwicklung" in Enschede im Frühjahr 1977 bereiterklärte, die Entwicklung und Verwirklichung von geographischen Curriculum-Materialien für Berufsschulen nach dem beim „Geographie für Edukation" entwickelten Modell für geographische Informationsfelder mitzufinanzieren, (d.h. nebst der Universität Utrecht) war PPR-2 als Untersuchungsprojekt gesichert.

So wurden innerhalb dieses zweiten Untersuchungsprojektes sowohl für den Unterricht relevante Materialien entwickelt als auch versucht, die Erkenntnisse, die man nach Abschluß des PPR-1 Projektes gewonnen hatte, umzusetzen und somit auch auf theoretischer Basis das Modell zu verfeinern.

PPR-2 ist ein Projekt, das lediglich von wissenschaftlichen Mitarbeitern des Hauses durchgeführt wird, Studenten sind nicht beteiligt; als Wissenschaftler wirken Drs. Hein Hointink, Drs. Rob van der Vaart, Frau Dr. Henriëtte Verduin-Muller und Fräulein Drs. Godelief Verschuren mit. Den Wissenschaftlern wurde von der Stiftung Curriculum-Entwicklung eine Begleitungskommission zur Seite gestellt, die von Unterrichtspraktikern und Fachwissenschaftlern der Geographie gebildet wurde, darunter befand sich u.a. Prof. Dr. Marc de Smidt, Ordinarius für Soziale Geographie des Geographischen Instituts der Rijksuniversität Utrecht. Das Projekt wurde effektiv am 1.9.1977 gestartet; abgeschlossen im Herbst 1980 mit einem Symposium im Geographischen Institut in Utrecht. Auf dieser Veranstaltung wurden Ergebnisse und Entwicklungsprozesse aus dem PPR-2 diskutiert. Aus dem Bereich der Geographischen Curriculumplaner und der Fachlehrer Geographie waren etwa 50 Teilnehmer eingeladen.

Abb. 1

a conceptual model for the processing of geographical information for education



Zum methodischen Vorgehen

Als methodische Basis wurde bei Entwicklung und Verwirklichung des PPR-2 ein von der Abteilung entwickeltes Konzeptionsmodell für informatives geographisches Handeln angewandt (vgl. Abb. 1). Ausgangspunkt für die Entwicklung dieses Modells war die Annahme der sich ändernden Aufgaben der Erziehung im Rahmen der nachindustriellen Gesellschaft und die damit verbundenen Aufgaben einer Alltagsgeographie im Sinne der Existenzerhellung. Im Rahmen dieser Entwicklung ist davon auszugehen, daß die Nachfrage nach individuellem Informationsmaterial stark steigen wird, stehen doch Entwicklungen, wie ein Mehr an Freizeit, umfangreichere Erwachsenenbildung, intensivere Kommunikationseinflüsse, sei es gedruckt, sei es elektronisch, ins Haus – oder auf einem abstrakteren Niveau angesiedelt: ein anders akzentuierter und strukturierter Schulunterricht, eine starke Erweiterung der informellen Bildungs- und Erziehungsebenen, eine starke

Erweiterung der Fortbildung, und schließlich, sicherlich auch sehr wichtig, eine zunehmende interne gesellschaftliche Demokratisierung durch eine intensivere, individuelle Informationsversorgung. Wollen die heutigen Schulfächer im Rahmen einer derartigen Entwicklung der Nachfrage entgegenkommen und gerecht werden, so müssen entsprechende neue und neuartige Materialien und Programme entwickelt werden. Dazu bedarf es als allererstes eines Modells, nach dem vorzugehen wäre.

Im Jahre 1974 wurde im Utrechter Geographischen Institut die Entwicklung eines solchen Modells für die Geographie angegangen. Dies geschah in Zusammenarbeit mit Doktoral-Studenten, in etwa gleichzusetzen mit den Examenskandidaten für die Sekundarstufe II und Diplomanden der Fachrichtung Geographie für Edukation in einem Projektseminar.

Der systemtheoretische Ansatz wurde aus der sogenannten „Black-Box Näherung" übernommen. Erste Themen zu dieser Vorgehensweise wurden formuliert (September 1976, IGU-Kongreß, Moskau, Sektion „Geography for Education"). Die sich daran anschließenden weiterführenden Untersuchungen kristallisierten ein konzeptuelles Modell heraus (London 1978, IGU-Symposium der Sektion „Geography for Education"). Nach etwa 25 verschiedenen Untersuchungsschritten in Projektform ausgeführt sind wir jetzt dabei, das zukünftige Arbeitsfeld und Wissenschaftsgebiet der „Geographie für Edukation" als System zu beschreiben, zu erklären und inhaltlich zu erläutern.

Beim PPR-2 wurde das so entwickelte Modell zweimal durchlaufen. Eine Auswertung von Output 1 (im Rahmen des Systemdenkens benützen wir den Begriff Output) hat uns so wichtige Hinweise gegeben, daß ein zweiter Output, also eine Revidierung von Output 1 nötig erschien. Ob in einigen Jahren noch einmal ein dritter Output vorgenommen wird, ist jetzt noch nicht absehbar, da dies von einigen noch nicht abschätzbaren Randbedingungen abhängig ist.

Lassen Sie mich jetzt, soweit die Kürze der Zeit dies erlaubt, Ihnen Modell und Elemente des Modells erläutern. Dies geschieht am Beispiel der Arbeit im PPR-2, wobei ich mich auf den ersten Modelldurchgang beschränke. Nur dort, wo es relevant ist, erfolgen Querverweise zum zweiten Modelldurchgang, dem Output 2. Innerhalb des Modells sehen wir jedes Element als Ganzes an. Um möglichst intensiv vom Modell profitieren zu können, muß prinzipiell innerhalb jedes Elementes das gesamte Modell durchgespielt werden. Wo es zusätzlich erforderlich ist, können dann über die bisherige Modellanalyse hinaus die einzelnen Elemente weiter ausgearbeitet werden. Für eine derartig vertiefende Modellanalyse fehlt uns jedoch hier Zeit und Gelegenheit. Wir beschränken uns somit auf die Elemente als Ganzes innerhalb des Modells, referieren jedoch im untenstehenden ein einziges Mal dieses methodische Modell auch innerhalb der Modell-Elemente-Konstruktion.

Zum Aufbau der Elemente innerhalb des Modells verweise ich noch einmal auf Abb. 1.

1. Element:
– Bedürfnisse, Zielsetzung, Zielgruppe

Bedürfnisse und Zielsetzungen wurden, wie schon gesagt, aus den Erfahrungen von PPR-1 übernommen. Eine Frage von Bildung und Erziehung sind, unserer Auffassung nach, Kenntnisse und Verständnis zur Raumgestaltung, Raumnutzung, Raumprobleme und die inhärente Mitsprache als Instrument in einem demokratischen Staatswesen.

Die Zielgruppe: Berufsschüler, ± 15 Jahre alt; in diesem Element wird nur die Zielgruppe als Kategorie angegeben.

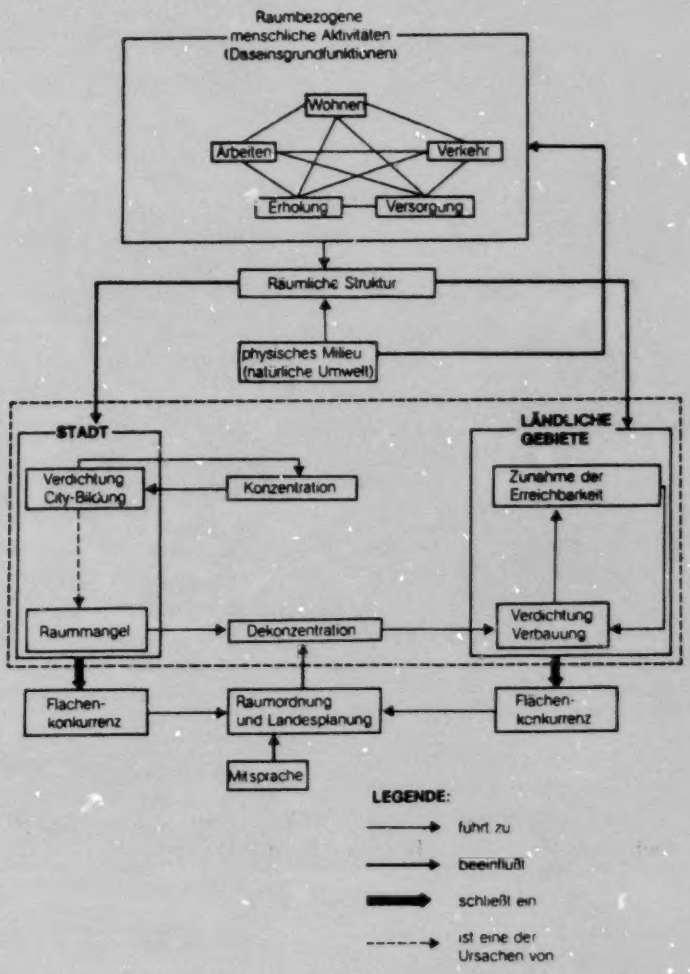
2. Element
– Wissenschaftliche Quellen:

Literatur zur Raumplanung und demokratischer Durchführung der Planungsvorhaben ebenso zugrunde wie Literatur und Untersuchungsergebnisse über sozialgeographische Fragen aus dem Randstad-Bereich. Außerdem wurden zeitweise Randstad-Experten aus dem Geographischen Institut in die fachwissenschaftlichen Überlegungen mit einbezogen.

3. Element
– Die Konzeptionsstruktur (= Begriffsstruktur)

Die Konzeptionsstruktur hat uns viel Kopfzerbrechen bereitet. Sie ist eines der schwierigsten Elemente im gesamten Modell. Dies läßt sich aus jeder Untersuchung heraus aufzeigen. Beim PPR-2 hat es drei verschiedene Generationen derartiger Konzeptionsansätze gegeben, teilweise sehr komplizierte teilweise relativ einfache Ansätze. Die Abb. 2 zeigt Ihnen die endgültige Struktur. Erfreulich war dabei, daß bei der Revidierung von Output 1, also im zweiten Durchgang des Modells, die ursprünglich gewählte Konzeption aufrecht erhalten werden konnte.

Abb. 2 **Letzte Version der Begriffsstruktur des Partizipationsprojektes Randstad**



4. Element
– Die Informationsstruktur

Zunächst ist hier auf die globale Informationsstruktur einzugehen (vgl. Abb. 3). Problematisch war dabei, daß die intellektuelle Kapazität der Berufsschüler nicht bekannt war. Ein zusätzliches Problem ergab sich daraus, daß gerade Berufsschüler des häufigeren eine sehr heterogene intelektuelle Gruppe zu bilden scheinen. Außerdem gibt es über Berufsschüler und Berufsschul-Unterricht zumindest in den Niederlanden nur sehr wenige Untersuchungen. Und zu guter Letzt kam hier auch noch eine ganz neue Art von Geographie auf die Berufsschüler zu. Somit kann es auch nicht verwundern, daß bei der Revision von Output 1 Stoffe umgruppiert und teilweise ersetzt worden sind – so wurde die Zahl der einzelnen Unterrichtsabschnitte von 8 auf 5 herabgesetzt, ohne jedoch dabei inhaltliche Kürzungen vorzunehmen.

Globale Informationsstruktur des Medienpaketes „Grondig Meedenken"

Kapitel, Titel und knappe Inhaltsangabe	Bezugselemente der Begriffsstruktur	Anzahl der Unterrichtsstunden
1 **Die Bodenbenutzung** Die raumbezogene Daseinsgrundfunktionen: Wohnen, Arbeiten, Versorgung, Erholung, Verkehrsteilnahme; Verallgemeinerung: Fünf Arten der Bodennutzung. Fast der gesamte Boden der Niederlande wird durch den Menschen genutzt.	Raumbezogene menschliche Aktivitäten (Daseinsgrundfunktionen)	5
2 **Die Planung der Bodennutzung** Zusammenhang zwischen den verschiedenen Arten der Bodennutzung auf Mikroniveau (Gemeinde) und Makroniveau (IJsselmeerpolder).	Räumliche Struktur	5
3 **Bodennutzung und natürliche Umwelt** Der Begriff „natürliche Umwelt"; Faktoren, die die natürliche Umwelt beeinflussen; der Zusammenhang zwischen Bodennutzung und natürlicher Umwelt in historischer Sicht; Beispiele: Geldersche Flußniederungen und Plan für den Vorhafen IJmuiden	raumbezogene menschliche Aktivitäten; physisches Milieu	6
4 **Die „Randstad" und das „Grüne Herz"** Die Begriffe „Randstad" und „Grünes Herz"; Wachstum der Randstadt; Merkmale des Grünen Herzens	Daseinsgrundfunktionen; räumliche Struktur; physisches Milieu	4
5 Veränderungen im „Grünen Herzen", Beispiel Vianen Vianen historisch gesehen; das heutige Wachstum Vianens; Folgen dieses Wachstums (Verbauung, Veränderung des sozialen Gemeindelebens; Verdichtung), Ursache des Wachstums Vianens (Wohnungsmarkt; Autobesitz; Erreichbarkeit); Verallgemeinerung: Verbauung des Grünen Herzens?	Dekonzentration; Verdichtung/Verbauung; Zunahme der Erreichbarkeit	6
6 **Veränderungen in den Städten der Randstad: Beispiel Utrecht** Der Raummangel in Utrecht; Ursachen des Raummangels (Rückgang der durchschnittlichen Familien- und Haushaltsgröße; Zunahme des durchschnittlichen Raumbedarfs je Wohnung). Folgen des Raummangels (Dekonzentration); die City von Utrecht: Merkmale und historische Sichtweise; Ursachen und Folgen der City-Bildung. Verallgemeinerung: Raummangel und City-Bildung in allen großen Städten der Randstad?	Konzentration; Verdichtung; City-Bildung; Raummangel	
7 **Erreichbarkeit und Flächenkonkurrenz** (vorläufiger Titel): Der Begriff Erreichbarkeit; Beziehung zwischen der Zunahme der Erreichbarkeit und der Flächenkonkurrenz. Beziehung zwischen der Flächenkonkurrenz und der Landesplanung.	Erreichbarkeit; Flächenkonkurrenz räumliche Ordnung	4
8 **Simulationsspiel** (endgültiger Titel noch nicht bekannt): Interessenkonflikte bei der Planung einer neuen Straße durch ein (fiktives) Dorf in den „Vijfheerenlanden"; Vertrautmachen mit dem Gebiet; Motive der verschiedenen Interessengruppen; Mitbestimmung und Raumordnung.	(hierin wirken alle Elemente und Beziehungen der Begriffsstruktur mit, besonders aber:) Mitsprache; Flächenkonkurrenz; Raumordnung	6

Abb. 3

Der zweite Teil der Informationsstruktur ist die präzise Informationsstruktur.
Hier wird in den einzelnen Teilabschnitten die inhaltliche Füllung einschließlich der erforderlichen Erklärungen und Medien vorgenommen. Die endgültige Formulierung erfolgt jedoch in der nächsten Phase des Modells.
An dieser Stelle wollen wir kurz auf das methodische „Modell im Modell" eingehen. Was ist nun für den Untersuchenden bzw. für die Untersuchung so wichtig, daß das ganze Modell in den einzelnen Phasen durchlaufen wird, also Bedürfnisse, Zielsetzung und Zielgruppe, wissenschaftliche Quellen, Konzeptionsstruktur usw.
Im ersten Element kann so der Untersuchende im richtigen Augenblick seine ganze Aufmerksamkeit auf die Zielgruppe richten, das charakteristische der Zielgruppe kommt zur Geltung. Was die wissenschaftlichen Quellen angeht, können Studien über Curriculumpakete zur Raumordnung und zur Mitsprache in derartigen Raumordnungsprojekten für das Berufsschulniveau, soweit sie überhaupt bestehen, berücksichtigt werden. Die vorzunehmenden Untersuchungen betreffen Analysen für Aufbau und Formgebung derjenigen Pakete, die erstellt werden sollen. Es geht also somit um die präzise Informationsstruktur. Dabei ist nicht auszuschließen, daß es bereits für das entsprechende Niveau eine derartige präzise Informationsstruktur gibt und auch veröffentlicht ist, so daß dem Untersuchenden ein Vergleich zwischen Soll- und Ist-Niveau offen steht. Leider kommt in der Praxis ein derartiges methodisches Vorgehen, das einen Sollzustand vorhandener Informationsstrukturen berücksichtigen kann, kaum vor. Wissenschaftstheoretisch kann die Projektion des Modells in den einzelnen Elementen sich so lange wiederholen, bis sie für die Untersuchung nicht mehr von Nutzen ist. Soweit die Modell-in-Modell Projektion und nun zurück zur Modellanalyse.

5. Element
– Das Realisierungselement

Während der Realisierungsphase kann man auf allerlei Durchführungsschwierigkeiten stoßen. Dann besteht durchaus die Gefahr, daß man sich nur noch begrenzt oder ggf. auch gar nicht mehr um die präzise Informationsstruktur kümmert. Um dann nicht ins Blaue hineinzuarbeiten, muß man sich daher von vornherein exakt an die präzise Informationsstruktur halten.

Innerhalb des Modells handelt es sich beim Realisierungselement um einen Komplex, der aus einer Sammlung von Teilelementen besteht, die beim PPR-2 alle innerhalb des Geographischen Instituts entwickelt werden konnten. Dies versetzte die Forschungsgruppe in die Lage, definitiven Inhalt und Form des Inhalts ständig zu überdenken. Dies erwies sich als sehr wichtig, denn des öfteren geriet ein fast fertiges Produkt aus dem Bereich der Initiatoren hinaus und wurde aus einer ganzen Reihe, meist gut gemeinter Gründe, sicherlich recht inhaltsreich aber geographisch nicht relevant, ergänzt oder verändert. Einmal vom Kostenaspekt abgesehen erweist sich ein derartiges Vorgehen in der Regel als schädlich für den Inhalt eines fachwissenschaftlich und fachdidaktisch ausgerichteten Informationspaketes.

Bei der Überarbeitung von Output 1 wurde beim Realisierungselement insbesondere darauf geachtet, die Kontinuität des Schwierigkeitsgrades in den einzelnen Kapiteln beizubehalten. Bei der Erprobung stellte sich allerdings heraus, daß der Schwierigkeitsgrad nicht immer der Zielgruppe entsprach. Vielleicht lag der Hauptgrund dafür in der Tatsache begründet, daß in der Berufsschule jeder Umgang und jede Erfahrung mit einer solchen „neuen" Geographie im Stoff und Lehrplan bislang völlig fehlte. Denn was ist in diesem Zusammenhang für einen Berufsschüler schwierig und was kann überhaupt als inhaltlich bekannt vorausgesetzt werden?

6. Element
– Die Erprobungsphase

In dieser Phase des Modells wird überprüft, ob im Rahmen der Zielsetzungen die geographischen Inhalte auf einem anspruchsvollen Niveau verwirklicht worden sind.

Der unmittelbare didaktische Aspekt, also die Benutzung und Verwendung in der konkreten Lehr- und Lernsituation vor Ort muß dem Lehrer überlassen bleiben, denn die didaktische Organisation auf dem Mikroniveau ist ureigenes Feld des Lehrers und kann für die einzelne Situation nicht in einer derartigen Unterrichtsreihe mit berücksichtigt werden.

Inhaltsverzeichnis: ‚Gründlich Mitdenken'

Angabe der Haupt- und Unterkapitel	Seitenumfang	Ergänzende Medien
1. Nutzung von Grund und Boden ● Wozu benötigen wir Grund und Boden? ● Benötigen wir alle Grund und Boden? ● Abhängigkeiten bei der Nutzung von Grund und Boden ● Mitentscheiden! ● Die Inwertsetzung eines Polders	18	– Ton-Bildreihe – Wandkarte der Niederlande
2. Die Randstad und ihr Grünes Herz ● Kennenlernen der Randstad und ihres Grünen Herzens ● Die Entstehung der westlichen Niederlande : physisch-geographische Aspekte ● Die Entstehung der westlichen Niederlande : die Aktivitäten des Menschen ● Bauen auf Moorboden ● Das Heranwachsen der Randstad	26	– Foliensatz mit Decktransparenten – Dia-Reihe (optimal)
3. Veränderungen in den Großstädten der Randstad, Beispiel: Utrecht ● Weniger Menschen in den großen Städten ● Weniger Menschen pro Wohneinheit ● Weniger Wohnraum durch Verdrängung ● Weniger Wohnraum durch Stadterneuerung ● Kann Utrecht noch größer werden?	22	– Dia-Reihe (6): Utrecht – Stadtplan: Utrecht – Topographische Karten 1 : 50 000 nr.: 38 Ost, 31 Ost, 32 West, 39 West als Sammelkarte
4. Veränderungen im Grünen Herzen, Beispiel: Vianen ● Vianen wächst schnell ● Versteinerung und Verdrängung ● Was halten die Menschen vom Wachstum Vianens? ● Warum ist Vianen gerade nach 1960 so gewachsen? ● Versteinert das Grüne Herz?	18	– Tonband (Interview) – Dia-Reihe (6): Vianen – Topographische Karten als Sammelkarte (siehe 3)
5. Raumordnung und Bürgerbeteiligung ● Vier neue Begriffe ● Raumkonkurrenz in Süd-Holland Ost ● Die Pläne der Behörden für Randstad und Grünes Herz ● Süd-Holland West ● Gründlich Mitdenken: ein Planspiel	18	– Ton-Bildreihe: Raumkonkurrenz in Süd-Holland Ost – Wandkarte: Regionalplan von Süd-Holland West – Planspielunterlagen
		Zu jedem Kapitel gehören Arbeitsblätter und Arbeitsaufgaben

Abb. 4

Das Paket wurde an drei Berufsschulen experimentell überprüft: In Utrecht (Verwaltungsberufsschule),, Tiel (Technische Berufsschule) und Gorinchem (Haushaltsschule). In jeder Schule waren mindestens 2 Klassen von ± 20 Schülern an der Untersuchung beteiligt.

Zu jedem Kapitel gehörten Arbeitsblätter und Arbeitsaufgaben. Zum Schluß folgte noch eine Abschlußüberprüfung. Oberstes Lernziel war grundsätzlich die Überprüfung, ob das Gelernte auch in anderen Situationen im Transfer verwertet werden konnte. Sehen wir es in der Bloomschen Hierarchie, so handelt es sich um ein Ziel, das an einer hohen Stelle einzuordnen ist.

Lassen Sie mich in diesem Zusammenhang eine kurze Anmerkung zur Zusammenarbeit mit den beteiligten Lehrern machen. Während des Entwicklungsprozesses des PPR-2 haben laufend und von allen Beteiligten als positiv empfundene Gespräche stattgefunden, insbesondere auch mit jenen Berufsschullehrern, welche an der ständigen Erprobung beteiligt waren. Leider hat auf beiden Seiten Zeitdruck verhindert, noch intensiver zusammenzuarbeiten. Die Forschungsgruppe hatte stets Gelegenheit, den Stunden, in denen die geographischen Informationen in der Klasse behandelt wurden, beizuwohnen. Am Ende dieser Stunde konnte sich auch der einzelne Forscher über die Inhalte mit Lehrern und Schülern unterhalten.

Der curriculare Output des Projekts: „Gründlich mitdenken"

Es ist im Rahmen dieses Referates nicht möglich, das ganze Paket, wie es nun in niederländischer Sprache vorliegt, zu analysieren. Ebenso wenig ist es möglich, den gesamten Entwicklungsprozeß methodisch durchzugehen: schließlich hat die Gruppe drei Jahre, zwar nicht ständig, aber doch sehr regelmäßig an diesem Vorhaben gearbeitet; auch hat es häufige Beratungen mit der begleitenden Kommission gegeben. Was den methodischen Vorgang anbelangt, haben wir uns damit bei der Modellerläuterung beschäftigt. Bei der nun folgenden Analyse des Paketes wollen wir die Charakteristika des Inhalts und der Form in den Vordergrund stellen. Dazu gehört eine genaue Kapitelangabe inklusive der eingesetzten Medien, eine Übersicht zu Arbeitsblättern und Lehrerhandreichungen und Hinweise auf potentielle Benutzer des Paketes.

Zunächst aber ein Wort zum Namen des Outputs vom PPR-2. Es trägt im niederländischen den Titel „Grondig meedenken". Übersetzt auf deutsch heißt dies „Gründlich mitdenken", aber auch „Räumlich mitdenken", denn „Grondig" ist im niederländischen doppeldeutig. Es bedeutet sowohl „gut" und „gründlich" aber auch „gründlich" im Sinne von „Grund", „Boden" oder „Raum". Ohne dieses Wortspiel im deutschen weiter aufgreifen zu können, werden wir im folgenden den Begriff „gründlich mitdenken" benutzen.

Doch nun zu den Charakteristika des Inhalts und der Form, wie in Abb. 4 aufgeführt, zunächst soweit diese den Inhalt betreffen.

Für den Inhalt von „Gründlich mitdenken" sind drei Faktoren maßgebend:
1. Der Mensch als Gestalter seiner Umwelt im Rahmen der Daseinsgrundfunktionen.
2. Raumplanung als Spiegelbild geographisch-relevanter Gruppeninteressen.
3. Zu diesen beiden allgemeingeographischen Aspekten tritt der regionale Bezug – die Randstad Holland und das „Grüne Herz"; denn auf diese Region bezogen sollen die individuellen und gesellschaftlichen Aktivitäten räumliche Ausgestaltung erfahren. Lösungen und Kompromisse bei der Planung dieser raumwirksamen Aktivitäten werden vorgestellt.

Auf die formale Vermittlung des Inhalts von „Gründlich mitdenken" bezogen, können wir ebenfalls drei Einheiten differenzieren.
1. Der Inhalt wird möglichst in verschiedenen Medien erfaßt: d.h. Wort, Karte, Grafik, Bild (sei es Photos, Skizzen, oder Dia-Serien), Interview oder Tonbildreihen bilden je nach Bedarf die inhaltliche Einheit. Dabei sollen sich die einzelnen Medien gegenseitig ergänzen, nicht das eine das andere ersetzen.
2. Prinzipiell wird nach dem sogenannten „Entdeckenden Lernen" vorgegangen; als erstes wäre in diesem Zusammenhang das Planspiel in Kapitel 5 zu nennen, eigentlich wurde jedoch dieses Vorgehen nach dem „Entdeckenden Lernen" im ganzen Paket praktiziert.
3. Die aktuelle Zielkonfliktsituation der Raumnutzung – dichtbesiedelte Region der Randstad auf der einen und das relativ leere „Grüne Herz" auf der anderen Seite – konnten in hohem Maße innerhalb der aktuellen Diskussion als zusätzliche Motivation und Parameter für räumliche Probleme herangezogen werden.

Was Arbeitsblätter und Lehrerhandreichungen anbelangt, müssen wir uns kurz fassen und können es in diesem Rahmen auch. Im Output von „Gründlich mitdenken" gibt es 11 einzelne Arbeitsblätter, alle diese Blätter enthalten Karten und Schemata. Die Arbeitsaufgaben sind innerhalb der Kapitel angegeben. Weitere Fragen und auch Anregungen zu vertiefenden Aufgaben stehen in den Lehrerhandreichungen. Aufgrund der sehr unterschiedlich ausgelegten Startkompetenz sowohl bei Lehrern wie bei Schülern und um dem Lehrer alle Freiheit zu geben, hat die Untersuchungsgruppe auch aufgrund der Erfahrung aus Output 1 diesen Weg gewählt.
Das Lehrerhandbuch enthält ebenfalls Informationen über den methodischen Aufbau und das Entstehen von „Gründlich mitdenken". Hinzu kommt eine ausführliche didaktische und methodische Analyse der einzelnen Kapitel und Abschnitte, die Lösung der Aufgaben, zusätzliche geographische Hintergrundinformationen und Anregungen zur vertiefenden Weiterarbeit.

– Mögliche Zielgruppen
Obwohl als Zielgruppe für PPR-2 zunächst Berufsschüler ins Auge gefaßt wurden, kann „Gründlich mitdenken" auch als Unterrichtsmittel in der Hand des Berufsschullehrers gute Dienste leisten, ohne daß die Schüler diese Unterlagen zur Verfügung haben. Am günstigsten dürfte eine Kombination beider Möglichkeiten sein. Dies muß der Lehrer letztendlich von Fall zu Fall selbst entscheiden.

„Gründlich mitdenken", kann natürlich auch als reines Informationsmittel für jeden Lehrer verwendet werden. Es ist ja durchaus möglich, daß aus allerhand Gründen der Lehrer das besagte Paket in der vorgegebenen Fassung gar nicht verwenden kann und trotzdem in irgendeiner Weise die im Paket aufgewiesenen Informationen räumlicher Natur und die inhärente Mitsprachemöglichkeit bei der Lösung von Raumproblemen im Unterricht aufgreifen will.

Eine letzte Gruppe wären Interessierte aus anderen Bildungsbereichen. Wir denken hier an die Erwachsenenbildung, insbesondere in den Niederlanden, auch an die sogenannte „De Open School". Die „Offene Schule" beschäftigt sich mit Gruppen von Erwachsenen, die meistens nur am 6-jährigen Primarunterricht teilgenommen haben. Sie treffen sich zweimal einen halben Tag in der Woche zu einem weiterbildenden Kurs.

Darüber hinaus ist „Gründlich mitdenken" für jedermann käuflich zu erwerben, so daß jeder an dieser Thematik Interessierte sich mit Hilfe dieses Paketes informieren kann. Dieses ausgedehnte Spektrum möglicher Benutzer mag ein wenig verwundern. Doch wird die breite Verwendung dank der geographischen Inhalte und der Darlegung des Inhaltes ohne Schwierigkeiten möglich. Dies liegt im wesentlichen daran, daß das Material nicht auf irgendein ohnehin schwierig festzulegendes Berufsschülerniveau ausgelegt worden ist, sondern Informationen geliefert werden, die von Fall zu Fall aufzuarbeiten sind.

Raumkonkurrenz in Süd-Holland Ost

Abschließend möchte ich Ihnen die Tonbildreihe „Raumkonkurrenz Süd-Holland Ost" vorstellen, im Tagungsbericht wenigstens in einer Textfassung.

Wie wir bereits erwähnten, wird der Inhalt des Paketes von verschiedenen Medien begleitet. Eines davon, diese Reihe, stammt aus dem PPR-1, also aus dem Mitspracheprojekt zum Regionalplan Süd-Holland Ost. Im PPR-2 haben wir diese Tonbildreihe weiter verwendet, um den Berufsschülern möglichst realistisch Gelegenheit zu geben, sich in Mitspracheverfahren einzudenken. Zwischenzeitlich sind an dieser Ton-Bildreihe noch einige Ergänzungen vorgenommen.

Die aus diesem Projekt stammende Tonbildreihe wurde ins Deutsche übersetzt, – im übrigen besteht auch eine englische Version. Diese Reihe wird bereits seit einigen Jahren auch von Kollegen in den entsprechenden Ländern für didaktische Analysen innerhalb des Geographiestudiums und des Geographieunterrichtes benutzt.

Raumkonkurrenz in Süd-Holland Ost wurde im Jahre 1976 von der Abteilung „Geographie für Edukation", damals war der Name übrigens noch „Soziale Geographie für Unterricht und Informations-Übertragung" hergestellt. Die Serie besteht aus 43 Bildern und dauert 13 Minuten.

Wir bedanken uns bei Prof. Dr. Robert Geipel, Geographisches Institut der Techn. Universität München, und Dr. Martin Fürstenberg seinerzeit Mitarbeiter des Raumwissenschaftlichen Curriculum Forschungsprojektes München für die Korrekturen sprachlicher Art und für das Besprechen des Tonbandes. Die technische Mitarbeit wurde von Film und Bild in Wissenschaft und Unterricht (FWU), Grünwald/München und dem Onderwijs Media Instituut, Rijksuniversität Utrecht geleistet.

Geographisches Institut
Sozialgeographie für Unterricht und Informationsübertragung (seit Oktober 1978 Geographie für Edukation)
Rijksuniversiteit, Utrecht

Visuelle Information
(Dias)

„Raumkonkurrenz in Süd-Holland-Ost"	Textliche Information (Ton-Band)
1. Titel des Programms	–
2. Satellitenaufnahme des westlichen Teils der Niederlande	Der Westen der Niederlande ist eines der dichtest bevölkerten Gebiete Europas. Die Bevölkerung wohnt hier konzentriert wie in einer Großstadt. Dieses Gebiet ist unter dem Namen ‚Randstad Holland' bekannt. Auf dieser Satelliten-Aufnahme ist das Gebiet der Randstad schraffiert.
3. Karte der urbanen Flügel	Die Randstad hat zwei Flügel: den Nordflügel und den Südflügel. Im Nordflügel befinden sich unter anderem die Städte Haarlem, Amsterdam, Hilversum, Amersfoort und Utrecht. Zum Südflügel gehören Leiden, Den Haag, Rotterdam und Dordrecht.
4. Karte der städtischen Gebiete 1850	Vor etwa hundert Jahren gab es hier noch kein zusammengewachsenes städtisches Gebiet. Die Städte waren damals noch klein.
5. Karte der städtischen Gebiete 1900	Durch den Zuwachs an Bevölkerung und durch die ökonomische Entwicklung fingen die Städte etwa um 1900 an zu wachsen. Die Beschäftigungsmöglichkeit in den Städten zog Menschen vom Lande an.
6. Karte der städtischen Gebiete 1950	Um 1950 zeichnete sich die heutige Form der Randstad bereits ab. Die Städte erweiterten sich. Auch die dazwischen liegenden Gemeinden fingen an zu wachsen.
7. Karte der städtischen Gebiete Prognose 1980	Dieser Prozess der Verstädterung ist besonders seit dem Ende der fünfziger Jahre weitergegangen. Man erwartet, daß die Randstad um 1980 so aussieht.
8. Karten 4-7 kombiniert	So haben sich im letzten Jahrhundert einige relativ kleine Städte zu einem ringförmigen Verstädterungsgebiet entwikkelt. Randstad bedeutet zu Deutsch Ringstadt.

9. Graphik der Bevölkerungsentwicklung der vier großen Städte	Seit den 60er Jahren nimmt die Einwohnerzahl der vier großen Städte langsam ab. Diese Abnahme wird durch das Wegziehen der Einwohner veranlaßt.
10. Alte Wohnungen, Amsterdam	Eine der Ursachen für den Wegzug der Einwohner ist die schlechte Qualität der Wohnungen in den alten Stadtvierteln. Der Komfort dieser Wohnungen ist nicht groß.
11. Groß-maßstäbliche Konstruktion, Amsterdam	Eine andere Ursache für den Auszug aus der Stadt ist der Verlust an Häusern. Viele Häuser müssen abgebrochen werden, weil sie baufällig sind. Auch findet ein Funktionswandel statt. Wohngebäude müssen Platz machen für die Anlage einer U-Bahn, den Bau von Verwaltungsgebäuden, öffentlichen Einrichtungen und Hotels.
12. Erneuerungsprojekt, Amsterdam	Anderswo werden alte Häuser abgebrochen und durch neue ersetzt. Die neuen Wohnungen sind größer als die alten, mit der Folge, daß jede Familie mehr Wohnraum bekommt. Auch werden sie weiter auseinander gebaut. Dadurch können weniger Menschen auf derselben Fläche wohnen. Eine große Zahl der Einwohner muß dadurch umziehen.
13. Wohnumgebung aus dem 19. Jahrhundert, Amsterdam	Der Mangel an Grün und das Fehlen der Möglichkeiten für Kinder, ohne Gefahr draußen spielen zu können, macht das Wohnen in der Stadt unangenehmer. Das bezieht sich besonders auf die Viertel aus dem 19. Jahrhundert.
14. Verkehrs-Durcheinander, Amsterdam	Schließlich wird auch der Erlebniswert der Stadt durch den lebhaften Verkehr vermindert. Der Verkehr verursacht Lärm- und Abgas-Belastungen. Die Sicherheit für Radfahrer und Fußgänger läßt viel zu wünschen übrig.
15. Neue Hochhausviertel, Utrecht	Viele Stadtbewohner ziehen infolge dieser Ursachen um. Sie lassen sich nieder in den neuen Hochhausvierteln am Rande der Stadt.
16. Karte der Umzugsrichtungen aus der Randstad hinaus	Andere Leute verlassen die großen Städte und ziehen in die Kleinstädte und Dörfer. Hierdurch beginnen die kleinen Kerne im grünen Herzen der Randstad zu wachsen. Auch in den Provinzen Nord-Holland, Gelderland und Nord-Brabant werden die kleinen Kerne auf dem flachen Land größer.
17. Einfamilienhäuser, Woubrugge	Einer der Vorteile des Wohnens im grünen Herzen ist das bequeme Einfamilienhaus, so wie hier in Woubrugge in Süd-Holland-Ost.
18. Grünanlagen, Woubrugge	Diese Häuser haben den Vorzug eines Gartens und sind von vielen Grünanlagen umgeben.
19. Spielraum, Woubrugge	Für die Kinder gibt es genügend Möglichkeiten, um sicher draußen zu spielen.
20. Lärmarme Straßen, Woubrugge	Es gibt wenig Verkehr und also auch wenig Lärm und Abgase.

21. Textliche Information über die Gründe der Abwanderung aus den Städten	Die Abwanderung aus der Stadt wurde durch die Hebung des Wohlstandes in den 60er Jahren möglich. Durch die Steigerung der Einkommen war es vielen Leuten möglich, ein Haus zu kaufen. Später konnte man durch Zunahme des Bestandes an Autos den Abstand zwischen Wohn- und Arbeitsort leicht überbrücken.
22. Reisezeit-Karte der Erreichbarkeit der wichtigsten Städte	Das „Grüne Herz" hat eine sehr gute Verkehrslage. Aus dem farbigen Gebiet auf dieser Karte kann man mit dem Wagen in weniger als 30 Minuten das Zentrum einer der vier großen Städte erreichen. Durch die Verbesserung der Straßen werden die Verbindungen immer schneller. Hierdurch nimmt der Umfang der weißen Gebiete weiter ab. Nur noch ein kleines Stück des „Grünen Herzens" ist weiß.
23. Textliche Informationen über Gruppen, die die Stadt verlassen	Besonders junge Familien mit Kindern und junge Menschen aus der Gruppe mit höheren Einkommen verlassen die Stadt. Die Älteren und die niedrigeren Einkommensgruppen bleiben zurück.
24. Historischer Stadtteil, Amsterdam	Daneben bleiben die Menschen mit den höchsten Einkommen immer mehr in der Stadt wohnen. Besonders die historischen Stadtteile sind beliebt. Oft besitzt diese Gruppe noch eine zweite Wohnung auf dem Lande.
25. Industrie im offenen Mittengebiet	Auch Betriebe und Einrichtungen lassen sich im Gebiet der offenen Mitte nieder, weil es gut erreichbar ist und Grundstückspreise relativ niedrig sind.
26. Graphik der Bevölkerungszu- bzw. abnahme	Durch den Umzug der Stadtbewohner ins Gebiet der Mitte, nimmt die Bevölkerungszahl hier immer mehr zu. Das wird durch die rote Farbe gekennzeichnet. Im Städtering wird die Bevölkerungszunahme immer kleiner, was durch die blaue Farbe angezeigt wird. 1970 gab es bereits eine Bevölkerungsabnahme innerhalb des Städteringes.
27. Textliche Information; Übersicht „der Raumkonkurrenzkampf"	Mit dem Zuwachs der Bevölkerung in Süd-Holland-Ost nimmt der Druck auf den spärlichen Raum zu. Alle Formen der Raumnutzung beanspruchen Platz. Hierdurch entsteht ein Konkurrenzkampf zwischen den verschiedenen Formen der Raumnutzung, d.h. zwischen Wohnen, Arbeiten, dem Verkehr, der Landwirtschaft, der ungestörten Natur und der Erholung. Das Ganze wird noch durch die Tatsache kompliziert, daß die eine Form der Raumnutzung mit der anderen zusammenhängt. So ist Wohnen ohne Verkehr unmöglich.
28. Wohnungs-Entwicklung in Süd-Holland-Ost.	Das Wohnen. Immer mehr neue Wohnungen werden gebaut. Das kostet Raum; Raum der von der Landwirtschaft abgetreten werden muß.
29. Moderne Industrie-Betriebe in Süd-Holland-Ost	Das Arbeiten. Die neuen Betriebe, die sich in Süd-Holland-Ost niederlassen, sind meistens ebenerdig. Sie brauchen besonders viel Raum.

30. Straße, lebhafter Pendelverkehr, Süd-Holland-Ost

Die Kommunikation.
Auch die neuen oder verbreiterten Straßen für den lebhafen Pendelverkehr beanspruchen immer mehr Platz.

31. Landwirtschaft und Gartenbau, Süd-Holland-Ost

Die Landwirtschaft.
Die Landwirtschaft ist die älteste und wichtigste Form der Raumnutzung in Süd-Holland-Ost, sie muß aber immer mehr Grund abgeben.

32. Flußaue-Vegetation, Süd-Holland-Ost

Die ungestörte Natur.
Die ungestörte Natur ist in letzter Zeit immer mehr durch den Bau von neuen Wohnvierteln, die Anlage von Straßen und Industriegelände und die immer intensivere Erholungsfunktion in Bedrängnis gekommen.

33. Jachthafen, Süd-Holland-Ost

Die Erholungsfunktion.
Der Raumbedarf für Erholung wird immer größer. Neue Jachthäfen werden angelegt, die Seen werden intensiv genutzt, und die Sportanlagen wachsen in Anzahl und Umfang.

34. Diagramm der konkurrierenden Raumnutzungsformen

Alle diese Formen der Raumnutzung konkurrieren miteinander. Dadurch entsteht ein fast unentwirrbares Knäuel von Interessengegensätzen. Bis heute mußten die unteren drei immer gegenüber den obenen drei den Kürzeren ziehen. Es ist die Aufgabe der Regierung, alle diese Interessen gegeneinander abzuwägen und bei der Feststellung der Raumordnungspolitik zu entscheiden.

35. Textliche Information über die Prioritäten der Provinzbehörde

Ebenso wie die Regierung will auch die Provinzbehörde Süd-Holland-Ost das „Grüne Herz" offen halten. Das „Grüne Herz" muß grün bleiben.

36. Textliche Information über die wünschenswerten Entwicklungen

Die Provinzbehörde entscheidet sich also für die bedrohten Interessen des Milieus und der Landschaft, für die Landwirtschaft und die Erholungsfunktion.

37. Textliche Information über die Beschränkungen

Die Provinz will dem Zuwachs der Zahl der Wohnungen, des Gebrauchs der Autos und der Errichtung bestimmter Industrien Beschränkungen auferlegen. Gleichzeitig wird der Versorgungssektor entwickelt.

38. Der Planungsbericht

Aus diesem Grunde hat die Provinzbehörde eine Anzahl Möglichkeiten für die zukünftige räumliche Entwicklung von Süd-Holland-Ost untersuchen lassen. Aus der Untersuchung sind verschiedene Alternativen hervorgegangen. Sie sind in dem vorliegenden Bericht „Alternativen en Varianten" enthalten.

39. Karte, Alternative A-D

Die erste Alternative ist Alternative A-D. Hier wird dem heutigen Zuzug von Menschen aus dem Städtering nach Süd-Holland-Ost Halt geboten. Die kleinen Kerne dürfen nicht mehr an Einwohnerzahl zunehmen. Der natürliche Zuwachs der Bevölkerung muß deswegen in Alphen, Gouda und Gorkum aufgefangen werden. Mittelgroße Kerne wie Leerdam, Schoonhoven und Bodegraven dürfen wohl ihren eigenen Bevölkerungszuwachs aufnehmen. Daneben aber hat der Schutz von Natur und Landschaft große Priorität. Eine

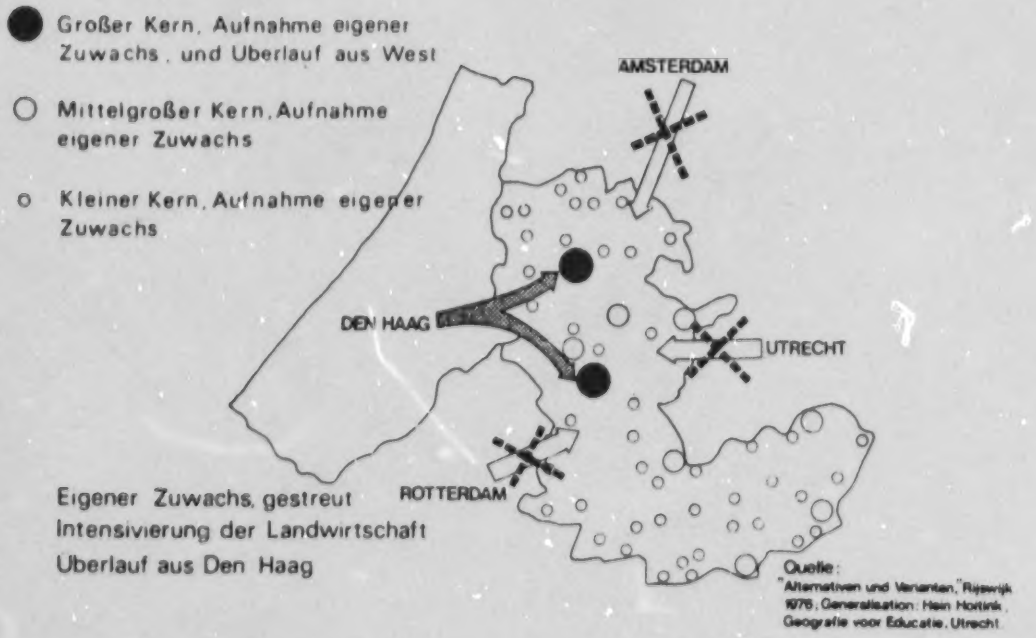
zweite Alternative ist Alternative F. Diese ist ungefär so wie Alternative A-D. Nur gibt es in F einige Wanderungsbewegungen aus Süd-Holland-West nach Gouda und Alphen.

40. Karte, Alternative B-E

Dies ist Alternative B-E. Jede Gemeinde, groß oder klein, darf hier ihren eigenen Bevölkerungszuwachs behalten. Dadurch wird dieser Zuwachs ganz über Süd-Holland-Ost gestreut. Alphen, Gouda und Gorkum werden dadurch nicht so stark anwachsen wie in den Alternativen A-D und F. Auch hier werden die Wanderungsbewegungen aus dem Städtering gesteuert.

41. Karte, Alternative C.

Die letzte Alternative ist Alternative C. Auch hier will man den Bevölkerungszuwachs aufteilen. Überdies werden in dieser Alternative Wanderungsbewegungen aus Süd-Holland-West gestattet. Diese müssen aber ganz in Alphen und Gouda aufgefangen werden. Beide Städte werden dadurch stark wachsen.



42. Textliche Information; die gewählte Alternative wird Grundlage sein für den Raumordnungsplan	Aus den genannten Alternativen muß die Provinzbehörde eine auswählen. Bei dieser Wahl wird mit den Vorschlägen der Bürgerbeteiligung gerechnet. Die gewählte Alternative ist dann die Grundlage für den Raumordnungsplan für Süd-Holland-Ost.
43. Produktion des Programms	–

Utrecht, Februar 1977

Zusammenfassung

Fassen wir die bisherigen Kenntnisse noch einmal zusammen, so kann festgestellt werden, daß das Projekt PPR-2 in verschiedener Hinsicht äußerst wertvoll gewesen ist.
Erstens liegt nun das Curriculumpaket „Gründlich mitdenken" für den Geographieunterricht oder für die gesellschaftwissenschaftlichen Fächer in den Berufsschulen vor. Die Lehrer verfügen über ein zeitgemäß funktionell gestaltetes Material, was sich gleichzeitig als eine Art Beispielpaket für andere Aktivitäten auswirken kann. Aufgrund der spezifischen Inhalte kann es auch für andere Gruppen im weiten Bereich von Bildung und Erziehung oder Interessierte allgemein wertvoll sein, sich mit diesem Paket zu befassen.

Zum zweiten hat der an diesem Modell entwickelte methodische Ablauf eine noch größere Vertrautheit mit dem Modell als solchem und den einzelnen Elementen an sich ergeben. Eine Folge war eine vertiefte Einsicht in den methodischen Vorgang. Dieses hat zur Modellverfeinerung geführt und war weiterhin behilflich bei der Systemformulierung.

Eine exakte Beschreibung dieses prozessualen Ablaufs liegt noch nicht vor, daran wird aber von Drs. van der Vaart gearbeitet und die entsprechenden Ergebnisse werden unter Einbeziehung der vorliegenden Arbeitsprotokolle und aller Materialien, nicht nur der endgültigen, bald veröffentlicht werden. Ob es zusätzlich zur niederländischen auch eine deutsche Fassung geben wird steht noch nicht fest.

Zum dritten sollte man auch nicht vernachlässigen, daß man innerhalb der Forschergruppe durch die intensive Zusammenarbeit auch einen zwischenmenschlichen Vorteil erlangen konnte. Man lernte einander gründlicher kennen und die positiven menschlichen und sozialen Fähigkeiten sowie die intellektuellen Kapazitäten konnten so besser in dieses Projekt eingebracht werden und bei den immer auftretenden inhärenten negativen Aspekten konnte man einander auffangen.

EXPERIENCES WITH A CONCEPTUAL CURRICULUM MODEL FOR GEOGRAPHY, FROM THESIS TO SYSTEM

International Geographical Union
24th Congress, Japan, September 1980

Paper: Commission nr.3
'Geographical Education'
Tsubuka, 6-12 September 1980

Dr. Henriëtte Verduin-Muller,
Drs. Rob van der Vaart

Geography for Education, July 1980
Geographical Institute, State University,
Utrecht, The Netherlands

But for the fruitful and continueing discussion and cooperative research among the staff and among staff and students this paper could not have been written. Thanks are due to:

Drs. Paul van den Boorn,
Drs. Hein Hoitink,
Drs. Godelief Verschuren,
Drs. Gerrit Worm,
and the doctoral students of
the generations 1974-1980.

the staff members, authors,
Dr. Henriëtte Verduin-Muller,
Drs. Rob van der Vaart.

EXPERIENCES WITH A CONCEPTUAL CURRICULUM MODEL FOR GEOGRAPHY, FROM THESIS TO SYSTEM

Contents page

1. The origins of the study of'Geography for Education' 5- 1

2. The exploration and the mapping of the scientific field of Geography for Education: a systems approach

2.1. Introduction 5- 3

2.2. The Theses 5- 3

2.3. The experiences with the conceptual curriculum model 5- 4

2.4. A system for geography in education 5-10

3. A final comment 5-21

Appendix I, The Theses (1976) see paper 1

Appendix II, The conceptual model (1978) see paper 2

Appendix III, A survey of the projects of'Geography for Education'(1974-1980) see II-4/5

Footnotes 5-23

EXPERIENCES WITH A CONCEPTUAL CURRICULUM MODEL FOR GEOGRAPHY: FROM THESIS TO SYSTEM

1. The origins of the study of Geography for Education

In May 1973 the Geographical Faculty of the Rijksuniversiteit, Utrecht, decided to start a doctoral research study in Geography for Education. In this, geography was taken to be an applied science. Included with education were formal (regular) and non-formal (adult) education, as well as the broad field of informal education, as illustrated by citizen participation in spatial planning procedures.

The decision to start this doctoral research study was taken into the light of the changes which society and especially Dutch society was likely to face, in the coming years. Among these were demographic changes (the Netherlands having entered into the post-transitional phase of demographic development), which meant less pupils, and thus less jobs in formal education. On the other hand, it also meant more elderly, and thus more potential clients for non-formal and informal education.

This is not the place to discuss the nature of the more individualized type of the self service economy of the post-industrial society, but we may hypothesise that education will have to assume a role much different from that in industrial society. There will be more need and demand for education. The extension of education will be determined by such factors, as more leisure time and the internal and external democratization of society on the one hand and the extension, improvement and demassfication of the communication media on the other. In consequence, education itself will change into making available highly qualitative module-like educational information units. The teacher will see him or herself in a different role: as a valuable study companion for the student.

Awareness of these facts, together with the knowledge that geography, especially the features of applied social and human geography have an important function in highlighting and giving an insight into such problems, including its capacity to provide an information and conceptual base for social participation and reform, was the justification for the fledgeling

doctoral study. And since so much empirical research in geography has and is to be done in the Geographical Institute in Utrecht, the new study 'Geography for Education' had a appropriate birthplace. This is not to say that there were not the usual innovational difficulties.(1)

Whereas research as well as communication with colleagues have taught us that the activities of Geography for Education are often intermingled with the training for geography teaching as such, we would like to make the following qualification.

From the very beginning we excluded teaching and dissemination practise from the field of Geography for Education because in the combination of geography for education (formal,non-formal and informal) and the teaching/ information practices there is an element of scientific incompatibility. Research in dissemination practices, for example, in the agogic field, as in teaching young students of < 18 and of 18 (pedagogic-didactic), and adult students of > 18 (andragogic-didactic) and in general information dissemination (mass-communication, public relations), is a separate field of study, and a complex one, belonging to the behavourial sciences.

In the late fifties we had therefore fundamentally to restructure the problemfield of our dissertation. From pure geographical teaching procedures we switched to the equally relevant area of information for geography for education. (2) We decided on this rather radical change after one year of research work.

This does not mean that in geography for education the target group is neglected. However the target group is to be seen in general terms, as a field of appplication and not in the specialized sense of an actual group to teach and to inform.

At the University in Utrecht the obligatory dissemination theory and application are studied and practised in related scientific institutes of the university, over a period of four months, by students of Geography for Education. This practice can be at formal, non-formal or informal education level.

2. The exploration and the mapping of the scienfitic field of Geography for Education: a systems approach

2.1. Introduction

In relation to the research work to be done the main task for the coming years was the exploration and the mapping of the field of science of Geography for Education as such. Answers to questions such as the delimitations of the field, the contents of the field, the infrastructure, type and kind of research within the field and relations with the science of geography, the educational science, the science of communication had all to be given. Posing questions and problems in a foot-loose way had to be avoided. In consequence it was necessary to study the field from a holistic point of view,thus the field had to be approached as a system.
It is interesting to this respect that in one of the most recent numbers of the West-German Geographical Review,Geographische Rundschau, E. Daum explicitly points out to the isolation and thus the more or less foot-looseness of the work so far done in the field of educational geography in so far as theory is concerned. (3)

It was especially systems theory and systems methodology in combination with social scientific research methods which supplied us with the necessary ideas for our exploration. It was also to be expected from former research that systematic designing of educational geographical information under careful and simultaneous study of the development process would give us insight into our scientific field. Thus it was decided to start to design geographical information for educational needs.

2.2. The Theses

So in order to map out the field to be explored operational research was set up. The social science research circle seemed to be a good entry into the black-box situation in which the field still was at that time (1974). This research was done in the context of doctoral research work by geographical students of Geography for Education (GE). Besides the students'

research there were also separate projects run purely by staff.
The first generation of projects led to the formulation of the so-called 'Moscow theses',so-called because they were presented on the 23rd IGU-congress in Moscow, July/August 1976. Unfortunately the theses could not be presented at the Leningrad symposion of the IGU-Commission on Geographical Education. Undoubtely a symposion presentation would have led to a far deeper discussion than was the case in Moscow.The full text of the Moscow theses is given in Appendix I of this paper.
The first four theses all give what could be called, in the framework of systems theory, 'real life system' factors of the researcher-group. (4) The 'real life system' factors must be seen as relating to the values of the researcher-group and not as a set of goals.
The first thesis giving one of this factors viz. the viewpoint adopted by the staff of Geography for Education on the function of geography for educational purposes. The second, third and fourth theses posed the view on the informational character of education (formal, non-formal and informal). In the fifth thesis were laid out the phases of the design and realization of education - geographical information, as identified during the work at the first generation of research projects. As might be clear from the text of this thesis, a relationship with aspects of curriculum renewal was to a certain extent identified.
The distinguished phases on turn formed the points of departure for the second generation of research projects. The fifth thesis was applied in the form of an exhibition about 'Randstad-Holland' (the Greenheart-Metropolis in the western part of the Netherlands). This exhibition, an initiative of Drs. Meijer of the Information and Documentation Centre for the Geography of the Netherlands, was displayed in Moscow (23rd IGU-congress) and travelled afterwards through the U.K., Belgium and the FRG. The exhibition was a success, on the evidence of the enquiries which followed it.

2.3 The experiences with the conceptual curriculum model for geography

As the first generation of projects led to the formulation of the these (2.2.), so the second generation led to a conceptual model.
In exploring the scientific field of Geography for Education the model performs the necessary transition function between theses and system

and is thus a further step to the development of theory and method in the field. Nine second generation research projects were executed on the methodological foundation of the first generation of projects.
The finished conceptual curriculum model, carefully written up and illustrated by fragments from the project-work, was presented at the IGU-symposium held in April 1978 in the Department of Geography of the Institute of Education of the University of London (5), at the symposium of the Regional IGU-conference in Ibadan (Nigeria) in July 1978 (6), and at the annual meeting of the American NCGE (National Council for Geographic Education) in Mexico City, October/November 1979 (7).

See Appendix II for a condensed version of the model.
Besides the discussion at the symposia, the model was discussed and put into operation by colleagues at different universities all over the world. A version in the Indonesian language, the Bahasa Indonesia, appeared (1978) for use with students of IKIP-Bandung (an Institute for Higher Education). Moreover the model continued in use for another two years within the project-work for the doctoral study Geography for Education at Utrecht University. Quite a number of third generation projects could be realized along the line laid out. Those projects executed by staff members, individually and and as a group, and by doctoral students in small groups were of different type, covering the formal, non-formal and informal fields in Geography for Education. In Appendix III is given a survey of all the projects between 1974 - 1980.
There was from the very beginning a continuous reflection on the research undertaken and written up in reports, theses, process descriptions, process evaluations, etc. So we acquired much fruitful information, not only concerning the actual model as a whole or per element, but at the same time also about crucial points in the decision making process involving in working the model. Together with the very diverse remarks, marginal notes and queries from colleagues abroad, which gave us a lot of unexpected insight into the complexity of the field under exploration, we had so much information available that we felt able to bring together the experiences in the paper under consideration.
Here we want to thank all the partners in the discussion, the intentional and the incidental ones, for their often so spontaneously expressed reactions. They have been of great help, and what is perhaps more important, of continous stimulation.

The experiences and reactions, the overall feed-back can be classified into three categories.We will mention them in turn below and comment upon them.

The first group of reactions is a very understandable one,related to the intermingling of Geography for Education with actual geography teaching. From an historical and practical point of view this is for logical, because interest in geographical education or geography and education usually meant formal teaching. So far as geographical institutes or educational institutes of universities were concerned they always thought in terms of the geography teacher to be.

In discussion with colleagues we commented that geography for education, strictly defined, was a phase in which geographical information in any form in a decision-making procedure was designed and realized. The dissemination-activities such as teaching, tutoring, informing and any form of guided reading resp. learning were to be seen as the necessary second phase. Such activities were in essence to do with aspects of behavioural sciences.

It was during this type of discussions that the curriculum concept gradually took better shape as a frame of reference for our work.

It was interesting to see that the mixing of the phases was characteristic of the situation of many colleagues in the Western World, whereas our discussion partners in Third World Countries (Indonesia, Nigeria, India, Venezuela, Mexico) did not reveal that confusion. The reason might be that in the Western World geography for education is identified with teaching practices, whereas in the Third World Countries with their shortages of books and other educational materials and lack of educational resources (teachers, schools) in general on the one hand, and the extension of communication channels at the other hand, geographical educators seemed in the first place to think of the problems of the availability of educational information in any form. We stress that the categories of discussion partners in both 'macro-regions' were the same: namely geography teachers, trainers of geography teachers and academic geographers.

A second kind of feed-back we received concerned the use of the model as such. Working with a model mostly constrains the individual, engaging him in various internal conflicts.Two factors are involved:

. personal styles of thinking (people have own ideas) and

. the methodological procedure itself, as formulated in the model.

Thinking is a human not a mechanistic or computerized process. Thus it bears all the characteristics of creative activity. It is beyond the scope of this paper to reflect on thinking processes and their deversification. We only posit here that within thinking activities the people involved have early points of reference which determine the output of their thinking. Seen in the framework of methodological scientific work the crucial moment then is to take hold of one's own thinking, to get it under control, to plan and to order ideas, and creatively to structure these ideas within the systematic framework of the model.

From our experiences with the model we learned that after studying the model people took a piece of paper and merely wrote down information for geography in education in a schematic way as an output of their idiosyncratic thinking or, even without taking this intermediate stage, immediately outlined rough sentences, graphs, sketches, and footnotes to pictures. In both 'output' situations the educational geographer has stepped into the model halfway or even at the end, satisfied with his own spontaneous thinking and available knowledge.

But educational geographers usually wish to be more thorough than this, so they return to the model and begin to look more closely at its infrastructure.The result is,however a time and energy-consuming wandering through the model, a rather unsystematic and even discouraging way of proceeding. The discouragement is mainly caused by the fact that the educational geographer concerned, has ignored the early stage of the model which include the crucial concepts structure. Thus it is assumed that the person involved has insight into the needs of the target-group in general, and full knowledge of the scientific sources concerning the topic. This is of course mostly not the case.

But the process is even more complicated. To get full benefit from the model it is necessary to go over each element in the same way as for the model as a whole. So each element and element within the element has to be handled in the authentic fashion of the model. This has to be done to a point beyond which element-analysis contributes no more to the refinement of the educational information process. The output of the separate moments of acting can be given in a single sentence or as headings and when not relevant can be omitted. To work in this way seems time-consuming but in the end it is time-saving because the process is fully under control

At the same time the output in an education-geographical sense is optimised because in a logical, step by step, and a scientific, relevant way, the process is developed.
In the above mentioned way the model gives the educational geographer a maximum of support and freedom at the same time. Since the function of education and especially educational geography in post-industrial society is so much changing, it is of fundamental importance to get the designing of educational geographical information out of the stage of art and to develop a methodological instrumentation for that purpose. But in doing so the moments of creativity incl. originality and flexibility must be retained,even stimulated and integrated into the scientific process.
In formulating the definitive processing model for information for geography in education the experiences, discussed in this section, will be further worked out.

The third and last group of experiences to be dealt with here is mainly derived from the research with our own students in Utrecht. It is that kind of feed-back resulting from systematic work with the model over a considerable period of time (see for the length of the timeperiod of each project, Appendix III).
We perceived that the model fell smoothly in two sections: the one being the needs, the aims, the target-group in general, the scientific sources and the concepts structure; and the other the information structure and the realization phase. The connection, in the sense of continuity, between the concepts structure and the information structure seems to be a very difficult one. Students had great problems in focusing on the essential meaning of the concept structure when working at the global and refined information structure. The deeper they wished to go into the refinement of the information structure the greater were the difficulties. It happened that something quite different emerged. The gap between the two elements appeared to be too wide. In the final processing model we will try to close this gap by adding another element or sub-element to that of the information structure. The solution we choose will depend on the outcome of project-research reports on model evaluation to be received in the next few months.

More food for thought is added by the fact that people in charge of developing educational information, especially such as geography, for mass media-use, tend to divide into two groups: one of a scientific inclination, designing the concepts structure (when written out usually called the masterplan), and the other group, consisting of media specialists, undertaking the realization including the scenario writing, comparable with the refined information structure. So often the good intentions and the expertise of the first group get lost in the practical activities and various kinds of working constraints of the second one. A state of great tensions can be the result, although for a high standard product it is particularly crucial that a certain consensus is maintained within the group as a whole. From our experimental work with the model we can posit that the people concerned are probably insufficiently aware of the consistency of the education geographical information process under consideration. As educational geographers we have to guard the unity of the process but at the same time to make sure that geographers for education who have knowledge of the potentialities of the diverse media will emerge.

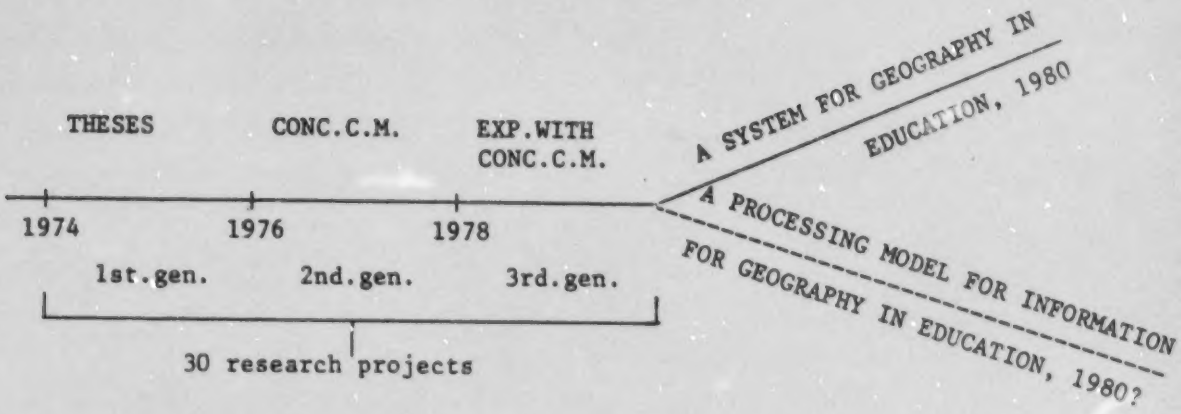
Enriched by all these expriences, the research as well as the discussions concerning the conceptual curriculum model, it is with confidence that we take the next stage in the mapping of the field of science for Geography in Education. As posed, the model functioned as an intermediate stage between theses on the one hand and the system-formulation and the processing model at the other hand.

In the next section of this paper we will make an attempt at putting fundamental aspects of theory of Geography for Education in terms of a system in order also to promote further consideration and research.

A processing model for information for geography in education will be formulated later, also to promote consideration and research of the methods of geography for education. We hope to complete the processing model by December 1980.

The above mentioned developments including the former ones are visualized in figure 1 (page 10).

figure 1. Visualization of the development of reseach of Geography for Education, period 1974-1980



2.4. A system for geography in education

Introduction

In this section we undertake a formulation of a system as a contribution to the science of Geography for Education. At first sight the system will be a relatively simple one at least for the unitiated reader. The main point however is that it provides a systematic view: a frame of reference for further theoretical work (research and literature study) as to Geography for Education, in accordance with the ideas of one of the advocates of the systemic approach, L. von Bertalanffy, and cited in Sztompka's valuable study 'System and Function' (8):

'We may state as characteristic of modern science that the scheme of isolable units acting in one-way causality has proved to be insufficient. Hence, the appearance in all fields of science of notions like wholeness, holistic, organismic, Gestalt, etc., which all signify that in the last resort we must think in terms of elements in mutual interaction'

The systemic approach of a science field has become increasingly applied, following analytical work undertaken since the Twenties of this century.(9) Although the ideas in themselves are much older than this.(10).

Various sciences have taken the lead such as physics, mathematics, biology, cybernetics, electro-technics, and later communication sciences. A General Systems Science has developed over the course of time and can be studied now in a number of universities all over the world. It appears a good augury for systems thinking in scientific research that so many workers of of so many different disciplines have contributed and that the national interdiciplinary associations have in turn so much international contact. It seems fully justified to call with Ackoff 'the emergence of the system a key concept in scientific research'. (11)

How to define a system? There exists a whole series of definitions, which, however, have a basic principle in common: namely that of classification.(12) From the different definitions we choose with Kramer and Smit the graceful appealing one of Hagen and Fall (13):
'A collectivity of entities between which exist mutual relations'.
The entities of the collectivity and the system as a whole thus show, as formulated by Ackoff,the following properties(14).

1. The properties or the behaviour of each entity of the collectivity has an effect on the properties or the behaviour of the collectivity as a whole.
2. The properties and the behaviour of each entity, and the way in which they influence the wholeness depend at least on the properties and the behaviour of one other entity of the collectivity.
3. Each possible subcollectivity of entities is characteried by both mentioned properties. Thus it is impossible to divide a system in independent parts.

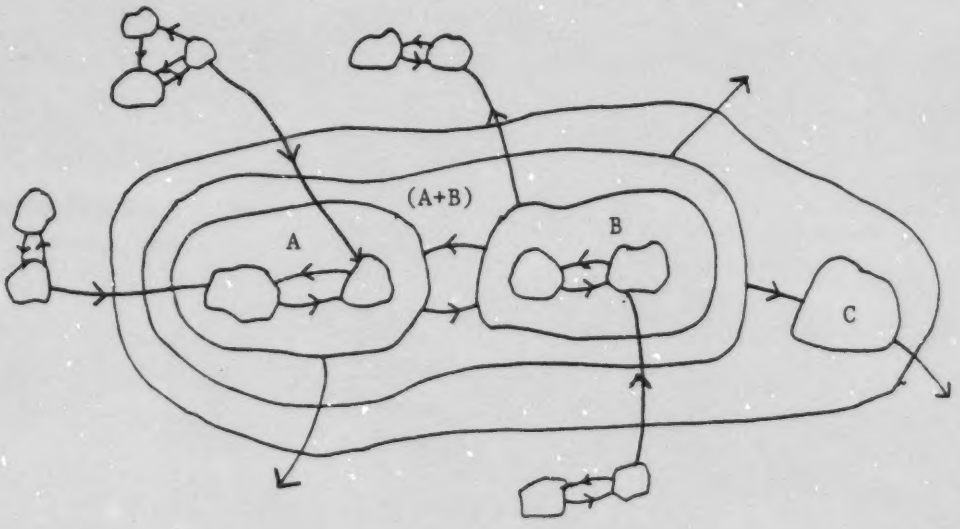
Adopted of these properties can be determined four general assumptions when structuring a system. We will deal with these assumptions later in this paper, here they are just mentioned:the assumption of plurality,the assumption of wholeness, the assumption of integration, the assumption of boundary. (15)
It is functional for the approach to distinguish within a collectivity (a system), subcollectivities, as subsystems. A subsystem can be defined as 'an element or functional component of a larger system which fulfilf the condition of a system in itself, but which also play a role in the operation of a larger system'. (16)

We don not think it is useful in this context to give more information about the systems phenomenon as such. The terms system (collectivity), subsystem (subcollection), sub-subsystem (sub-subcollection) and entity (element) will receive fuller treatment below. We prefer the term entity to element, because we think element here too neutral.

A system for geography in education

The systemic view we introduce has, as we have seen, an organizational function with respect to theoretical knowledge.
Our research and experinece with the conceptual curriculum model has given us insight into the crucial points at which basic decisions within the science field have to be taken. (We do not mean processing decisions which are of another order.) In considering such a crucial point we determined the thing it was a case of and in abstracting the thing we conceptualized the system as such.
The system for geography in education, we suggest, consist of two sub-systems: (A+B) and C. In figure 2 the system, its sub-systems, sub-subsystems and entities are given. The agogic-didactic whole is structured in subsystem C. This sub-system, got its position within the system, however it is not worked out here, not because it is not important, but because it is, as earlier research has taught us, in the first place a matter for the behavioural sciences, which are not our scientific field.

Figuur 2. A system for geography in education



The system has been composed as an outcome of recent research (theses and conceptual curriculum model) and former research (academic dissertation work), so no speculations or wishful thinking are involved. The relatively small scale of the system is an invitation to the building of future theory, and only from further research can a scientifically accountable extension of the system follow. It will be useful to say explictly and once again that within the system are grouped elements of theory of the field that are of a curricular nature. A processing model for information for geography in education will, also as a research outcome, be given later this year (see figure 1, page 10).

We now wil reflect on the elements of the sub-subsystems A and B, the sub-systems as such and the system at large. Since this is a conference paper we cannot give as full an explanation as we would like. But another publication which does this is in hand. Nevertheless we hope to give the reader here some background as to the construction of the system and above all to suggest ideas for further research.

Before beginning our reflections it will be necessary to draw the readers attention to the fact that always, including in scientific work, the 'real life system' of the researcher must be taken into account.(17) Thereby we mean the views, attitudes, role taken by the researcher towards his work. The reader must be aware of this phenomenon especially in the case where clarifying the researcher's insight is under consideration. The most relevant aspects of the 'real life system' of the research staff of Geography for Education are formulated in the theses (see Appendix I), thesis I relating to the function of geography for education in society, theses 2/4 to the position of education.

The sub-subsystems A and B, their entities

To make the distinctions clear we named the two sub-subsystems A and B. In sub-subsystem A are brought together two distinguishable entities of mutual relations, namely:

- a societal 'need' for educational geographical information, for formal, non-formal and informal education and
- a 'content' on the basis of primary and secondary sources from the science of geography.

In the sub-subsystem B two basic entities of the communication media are grouped. They belong in principal together but are different in their value for geography in education:
- the message, bearing educational geographical information,
- the channel, as a means of transportating the message.

Sub-subsystem A, the entities and the mutual relations between the entities.

The first entity of sub-subsystem A is the societal need for geographical information for formal, non-formal and informal education and implies a choice for the functioning of education in a humanistic sense. The activity to undertaken within this entity means the making and justifying an inventory of educational needs in the light of the potentialities of the science of geography (human, social and physical). These need to be translated into aims for working reasons. Specifying the aims further as objectives and goals is not useful, even confusing.
Certainly we have noticed since the HSGP (American Highschool Project Project)-'movement' during the late Sixties and the early Seventies a growing awareness of the possible contribution of geography to the understanding of spatial structures and spatial behavioural processes in society. This awareness we clearly find also in other countries (U.K.,FRG, The Netherlands, Switzerland, Belgium, Norway, Sweden, Denmark, France, Austria).
But especially as we are now standing on the treshold of post-industrial society inwhich education is taking a different, a more existential role, as presented in the introductionary section of this paper, another systematic inventory is therefore required which relates to the needs of the society and the individual in general concerned. There is in its applicattion a great deal of overlap in respect of formal,non-formal and informal education. So we can imagine that the supply of geographical information for informal education as practized in citizen participation in regional planning also can be part of a learning unit of the geography curriculum for formal education, as indeed was the case in one of the projects viz. nrs. 8-1/2/4, see Appendix III. Such geographical information might also serve non-formal, thus adult, education, e.g. in the Netherlands 'The Open School' (Adult courses).

As the educational needs are determined by the development of society as a whole and of the social participation or non-participation of the individual in particular,we must expect that as societies vary, as a result of historical and political influences the inventories of need will be different in each case. On the other hand we must register a growing similarity in social, economic and humanistic problems in general in society,not only in the countries of Western Europe, but also in the different regions of the world. So the general needs of geography in education may well be increasingly in harmony, though of course the concrete geographical content wil be different.

The second entity of sub-subsystem A refers to the content of information making up geography for education. Such a content is dependent on what the science of geography (human, social,physical) has to offer,suggest and to contribute to the need as described in the first entity. The more applied research outcome is available, the better resources in principle the geographer for education has at his disposal. The more institutionalized the dialogue and the cooperation between geographers for education and applied geographers, the more oustanding will be the way in which geography can fulfil its function in providing content of a high standard. And if no research findings (primary and secondary) are available to meet the perceived educational needs,applied geography can be stimulated to set up new research in order to provide the necessary data. Thus the geographer for education through his work can promote geographical research.
As the study of geography as a science varies from country to country also the contribution of pure geography to geography for education will be different. We have noticed, however, from professional journals, research outcomes as published in books, reports and conference papers that, in general terms, the long-existing gaps within the study of academic geography in different countries is gradually closing. For the development of geography for education so much dependent on cooperation with applied geography, this is a more promising outlook.

The mutual relations between the entities of sub-subsystem A will be clarified now.

The ascertained needs must be met. If not society as a whole and the individual in particular has to 'pay' for it, not so much in financial terms but more in the form of social and human unrest, in feelings of displeasure, uncertainty, discouragement. We think, for example, of the misuse of our limited basic resources, of the competition for space, of the vulnerable environment.

The meeting of the needs of geography for education is related to the sources applied geography can provide. Geography for education does not in itself adapt the sources for educational use, but works with the sources in order to try to meet needs of education. The mutual relations of the needs and the content are already an important topic of study. We did not find in the literature the systemic view of the relation between needs and content, rather, in the curriculum literature, for example, discussions of discipline-centred versus child or better client-centred views.

Within 'Geography for Education' at the Geographical Institute in Utrecht, Drs. Rob van der Vaart, co-author of this paper, is examining, as a contribution to the theory, the mutual relationships between the needs of geography for education and the contents required for meeting these needs,especially in respect to the contribution of applied geography.

Aspects of the mutual relations between 'needs' and 'content' in geographical education in the Dutch Republic (1579-1795) were examined by the author of this paper and have been presented as a research paper for this IGU-congress, Tokyo, 1980.(18) The study of the functioning of geographical education in this pre-industrial society was executed as a preparation for the study of geographical education in our post-industrial society.

The sub-subsystem B: the entities and the mutual relations between the entities

This sub-subsystem is concerned with the communication media.Any content to function properly will need a medium through which to communicate itself, whether,for example,the spoken or printed word, or in the 'classical' audio-visual presentation, or in the electronic media. The two entities we distinguish are covered by the terms: message and channel, both much current in the communication literature. Message and channel are strictly related. The one cannot function without the other.

In justifying reserving a full sub-subsystem for aspects of the communication media we provide a short historical review.

Of all the media the audio-visual ones, enjoyed a high level of educational interest during the late Forties and the early Fifties, mainly as a consequence oftheir successful and rapid dissemination in mass education during the Second World War in the USA. The development slowed down and nearly came to a stand-still in the late Fifties and early Sixties, among others reasons,because curriculum renewal did not appear quickly enough. American educators took up the gauntlet and curriculum reform was accelerated, and creativity promoted. The reforms were stimulated by the launching of the Sputnik (1957). American educators feel rather disappointed by the lack of impact of these reforms in their country, as we were told by the well-informed Prof. Dr. A. W. VanderMeer, now in Tuscaloosa (AL). This might be so, but such reforms were echoed in similar developments over the world. In geographical education, the American HSGP found its counterparts in the U.K., (The Schools Council Projects), the FRG, (the RCFP) and, in less publicised ways, affected geographical education in many other countries.(19)

In the late Sixties and throughout the Seventies the communication media including the audio-visual ones, gained resp. regained ground. They took their place more firmly in society as a whole and to a certain extent in education. World-wide fusions of media-firms were the order of the day. We cannot pursue this development, as the causes are rather complex. Suffice it to say that as a result of the high technical standard of the apparatus, and secondly through curriculum innovations, the presentation of content was improved. A comparison of almost any geographical school-book-series from the Fifties and the Seventies in the different countries in itself shows the great progress which has been made in these respects. We have chosen for this example because it easily can be checked.

In addition to the media developments, we will have even to cope with an extension of the media, especially the electronic ones, such as satellite transmissions and graphic devices, in the very near future.(20)The media's role will be evident.

It is for all these reasons that we make aspects of the communication media as a sub-subsystem in itself. We badly need theoretical studies about this phenomena. It is crucial to study specifically on behalf of the nature of geography in education the relationship between message and channel. We must add that what is meant here is not the study of actual educational communica-

tion situations. Of course this can be done as a method, but not as a theoretical act in itself. In other words we vary McLuhan's famous slogan 'the medium is the message'. The message can be the medium.
What can be done in this respect? We can think in terms of designing and examining a matrix of all the communication channels with their characteristics, and relate these to examples of relevant, experienced, geographical messages. The theoretical study of the entities encapsulated within the sub-subsystem is of essential importance in order to get a maximal and relevant communication of a geographical message.

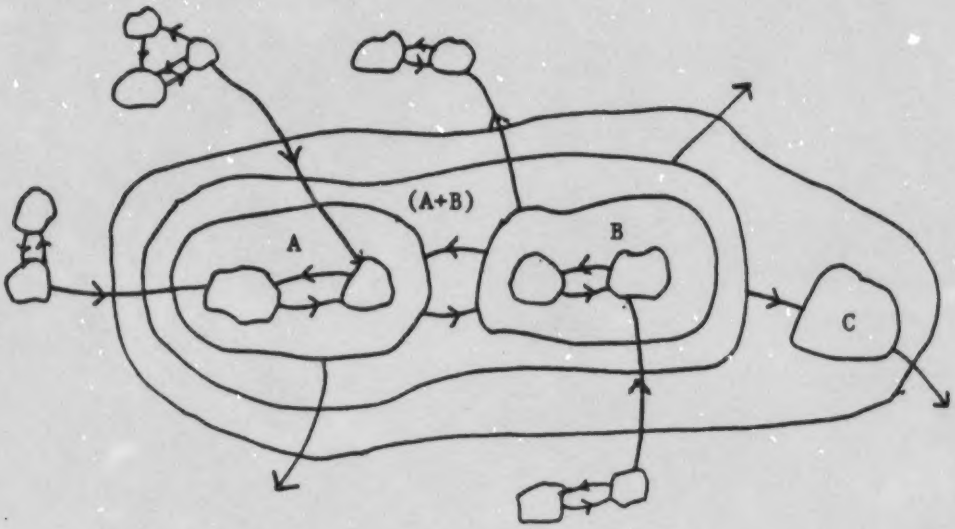
The subsystem: (A+B)

As we have seen both sub-subsytems A and B need to be studied in their theoretical aspect separately. But when certain discissions are hypothesized, then the sub-subsystems are brought together and to be studied as functions of each other: sub-subsystem A in function of B, and sub-subsystem B in function of A. The theoretical output can influence the agogic-didactic subsystem C or leave the system directly in order to influence research andother work for formal, non-formal and informal education. We then think also of such influence on our own, still to formulate. processing model for information for geography in education.

The system at large

Uphere we have sketched, as an easy entry, parts making up the system. Now it seems scientifically attractive to consider our system from the angle of the assumptions adapted of the properties of a system. These properties were mentioned in the introductional part of this section (page 11).
For our purpose we made use of the analysis of the assumptions in Sztompka's, System and Function.(21)
And as a visual image gives that unique overall view, figure 2, in which the system is presented, will be reprinted here in order to meet the reader.

Figuur 2. A system for geography in education



The assumption of plurality. The system for geography in education consists of a set of subsystems (sub-subsystems), named by us (A+B), (A,B) and C.

The assumption of wholeness. The system for geography in education is a specific whole in that it is taken as a form of applied geography having properties of its own. The source for these particular properties is sought in the interrelations of the subsystems and sub-subsystems within the whole. These elements do not constitue a diffusive aggregate but are rather bound together by certain relations.

The assumption of integration. This assumption is specifying what the subsystems are and the type of interrelations binding them together. We distinguished two subsystems (A+B) and C and within the subsystem (A+B), two sub-subsystems A and B, each consisting of two entities. (The subsystem C was not further detailed.)

The sub-subsystems A and B were described in respect to their entities. Full attention was paid to the mutual relationschips between the entities of A and B respectively. Between A and B as sub-subsystems of the

subsystem (A+B) exist mutual relationships.The relation between the subsystem (A+B) and subsystem C can be characterized as unilateral,in that sense that the relationship will be from (A+B) to C. This is not to say that from the workers on subsystem C as an agogic-didactic whole,suggestions could not be radiated as systems-inputs to (A+B), or A and B separately. It might be that further research of subsystem C provides indications for other intrasystemic relations. For now we keep the relation unilateral:from (A+B) to C.

With the distinguishing of mulitlateral and unilateral relations, we enter the field of specific assumptions viz. that of reciprocity and exploitation. For clarifying of these assumptions in our system we refer to remarks made throughout this paper and to the position of the agogic-didactic activities.

The assumption of boundary. Our system has boundaries,although, as might be clear from the preceding text the system can be classified as an open one. To clarify this: the intensity of the interrelations between subsystem, sub-subsystems and entities is significantly stronger than the intensity of interrelations between the objects not being considered as elements of our system. The ascertained openess however, points to existing interrelations with entities outside the system. Some of these entities we consider as the environment of a system viz. those which influence the system or are influenced by the system. In our system for example the findings of applied geography belong to the environment because they influence the system, whereas research for 'informating one self'as an educational activity will be part of the environment in the sense of influenced by.

For now this must be the end of the reflection of the system as a whole. We want to stress that much of the project-work in geographical education has provided essential information for further study of the system for geography in education. We think of different publications to the Schools' Council's geographical projects in England and Wales; the West-German RCFP, Das raumwissenschaftliche Curriculum-Forschungsprojekt, and the Dutch PPR-2, Participation Project Randstad-II, (see Appendix III, nr..8-4) and also of Hein Hoitink's article 'Geografie en Voorlichting, (Geography and informal education), which is based on primary and secondary sources and concerns the function of geographical information in citizen participation in regional planning,taking the case of the province of South Holland. (22)

3. A final comment

Now we have come - for the 'paper being' - to the end of our explanations and reflections, we can ask ourselves, did we met the task we set ourselves in 1974 when we undertook to explore and to map the field of science of geography for education? We must realize that searching for theory and method never ends.A large scale map makes it easier to become familiar with a field than a small scale one.
Thanks to the close cooperation between the GE-stafmembers in Utrecht, as well as between the staff and the doctoral students, as well as the discussions with colleagues and friends all over the world, we were able to lay out successively two stepping stones: the theses and conceptual curriculum model for geography, on the way to achieving the system and the processing model. So we have the feeling that now already we are working with a medium scale map of the field.
An intrigueing question: can the field of science of geography for education from its nature be identified as a curricular field? It might be clear from the progress of our research that we tend to endorse this view. In brief,information for geography for education must become available for the benefit of the individual human beings and for society in general, whatever the formal organizational setting of eductioal planning may be.
No doubt the theoretical work to be done will lead to the necessary refinement and broadening of the system. We expect also that such work will result in a methodological improvement. It will make possible a reliable underpinning of the decisions to be taken when putting into practice the still to be produced processing model for information for geography in education.
We invite all our discussion partners to remain alert and to continue to communicate with us their critiques.

And to end with we want to place this discussion in a humanistic context. Until now we have not mentioned explicitly the project work done in the sense of substantive output because discussion of theory and method was our main aim. But now is the moment to point out that much worthwhile geographical information for formal, non-formal and informal education has emerged from the Geographical Institute in

Utrecht over these last six years. The outputs, in book-form, learning-packages, films, exhibitions, student-information, brochures with teacher-information etc.etc. have been used on many occasions, and for different and sometimes unexpected purposes.

The students involved, who in the mean time finished, went on to employment in various jobs and functions relating to formal, non-formal and informal education. Next to teachers in formal education, we find in non-formal education our former students as teachers, tutors, course-leaders in all types of adult-education, and in part-time education for schoolleavers. In informal education we met them in a great variety of functions such as in educational services in museums for anthropology and Third World Development; with educational publishers in geography-editing functions; governmental services for citizen participation at the local (town council) and the variuous regional levels in spatial planning; services for landscape-protection and landscape and recreation (as far as geographical information concerns); in the Ministries of Education and Science, and Culture, Recreation and Welfare; and in project-work in Third World countries, involved in information-design.

Looking backward over the research done, the output of the projects and the responsible positions taken up by our former students, faculty board and staff together with the students can approach the future with confidence.

FOOTNOTES

1. For those interested we will be happy to send a program of the course, in English,which takes a full two years, after a three year's period of geography study (the so-called 'candidates' period).

2. H.S.Verduin-Muller, 'Leren met beelden', diss., Groningen, 1964.

3. E. Daum, 'Didaktische Neuorientierung als Schicksal?'.In Geographische Rundschau, 7/1980, p.3341-344.

4. The concept 'Real Life System' is formulated by in 't Veld, J. in 't Veld,Analyse van organisatieproblemen,Amsterdam,1978; cited and considered by N.J.T.A. Kramer en J. de Smit, Systeemdenken, Leiden, 1979, p.37.

5. H.S.Verduin-Muller,'A conceptual Model for Curriculum Planning in Geography'. In N.J. Graves (ed.), Geographical Education: Curriculum Problems in Certain European Countries with Special Reference to the 16-19 Age Group, University of London, Institute of Education,1978.p.8-42

6. H.S.Verduin-Muller, R. van der Vaart, 'The Geographical Information Educationist, the why, what and who of a new profession', IGU-regional conference,Nigeria, 1978; paper: Commission nr.3,Geographical Education, Geographical Institute, State University, Utrecht, 1978,18 pages.

7. H.S.Verduin-Muller, 'Geographers in the post-industrial Age',National Council for Geographic Education, Mexico City, 1979, Geographical Insitute,Sate University, Utrecht, 1979, 11 pages.

8. P. Sztompka,'System and Function', New York, 1974. p.56.

9. N.J.T.A.Kramer en J. de Smit,'Systeemdenken',Leiden, 1979. p.11-13.

10. A.C.J. de Leeuw,'Systeemleer en organisatiekunde', Leiden, 1974, p.11.

11. P. Sztompka,'System and Function',New York, 1974, p.56.

12. D. Keuning, 'Algemene systemtheorie,systeembenadering en organisatie-theorie', Leiden, 1973, p.46-49.

13. N.J.T.A.Kramer en J. de Smit, 'Systeemdenken', Leiden 1979, p.28 .

14. N.J.T.A.Kramer en J. de Smit, 'Systeemdenken', Leiden 1979, p.28.

15. P. Sztompka, 'System and Function', New York, 1974. p.58-60

16. N.J.T.A. Kramer en J. de Smit, 'Systeemdenken', Leiden 1979, p.49.

17. See foot-note 4.

18. H.S.Verduin-Muller, 'Geographical Education in the Dutch Republic (1579-1795)'.In W.E.Marsden (ed), Historical Perspectives on Geographical Education, Research papers prepared for the 24th Congrees of the International Geographical Union, Tokyo, 1980,University of London, Institute of Education,London, 1980, p.18-31.

19. A.M.Gunn (ed.),'High School Geography Project! Legacy for the Seventies. An analysis of the High School Geography Project in relation to the new developments in geographic education worldwide,IGU-Congress, Canada, 1972, Centre Educatif et Culturel Inc. ,Montréal, 1972.

A.M.Gunn,'The role of the HSGP in mass education', The Joural of Geography, 5/1975.

20. Satellite Broadcasting and Communications Policy: Direct Broadcast Satellite comes of Age, Journal of Communication, University of Pennsylvania, Philadelphia, 1980, p.140-202.

21. P. Sztompka, 'System and Function', New York, 1974, p. 58-72.

22. H.Hoitink, 'Geografie en Voorlichting', 1980. This article will be published in a forthcoming issue of'Stedebouw en Volkshuisvesting'.

FROM 'GLACIERS IN THE ALPS' TO 'GLACIERS AND TOURISM IN THE ALPS', A REPORT ON AN ADAPTATION OF A WEST-GERMAN MULTI-MEDIA PACKAGE FOR THE SCHOOL-CURRICULUM IN THE NETHERLANDS

INTERNATIONAL COUNCIL FOR EDUCATIONAL MEDIA (ICEM),
1980 HELSINKI SEMINARS,
HELSINKI, FINLAND,
OCTOBER 8th TO OCTOBER 11th, 1980.

Dr. Henriëtte Verduin-Muller
Geography for Education
Geographical Institute, State University, Utrecht, The Netherlands
August 1980

FROM 'GLACIERS IN THE ALPS' TO 'GLACIERS AND TOURISM IN THE ALPS', A REPORT ON AN ADAPTATION OF A WEST-GERMAN MULTI-MEDIA PACKAGE FOR THE SCHOOL-CURRICULUM IN THE NETHERLANDS

CONTENT

	PAGE
. INTRODUCTION	6- 1
. GENERAL RATIONALE OF THE ADAPTATION	6- 2
. 'WHO' WERE INVOLVED IN ADAPTING THE MULTI-MEDIA PACKAGE?	6- 2
. THE NATURE OF THE ADAPTATION	6- 3
. THE DETAILED RATIONALE OF THE ADAPTATIONS	6- 7
. EVALUATING THE ADAPTED VERSION	6-11
. A FINAL COMMENT	6-12

FROM 'GLACIERS IN THE ALPS' TO 'GLACIERS AND TOURISM IN THE ALPS', A REPORT ON AN ADAPTATION OF A WEST-GERMAN MULTI-MEDIA PACKAGE FOR THE SCHOOL-CURRICULUM IN THE NETHERLANDS

Introduction

In 1979 the adaptation was undertaken of a multi-media package, which had been developed and realized by FWU-(Munich), for the geography curriculum in the Netherlands. In this article we will give an account of the process of adaptation.

The multi-media package under consideration 'Gletscher in den Alpen', ('Glaciers in the Alps'), was produced by the 'Institute für Film und Bild in Wissenschaft und Unterricht' (The Institue for Film and Picture in Science and Teaching), München (Munich), Grünwald, FRG., in cooperation with the 'Vereinigung Schweizerischer Unterrichtfilmstellen' (Association of Swiss School film departments), Zürich. The target group was: the first year in secondary education, the socalled 'Sekundarstufe 1'.

To express in print, an uni-medial means after all, about the adaptation of a multi-media package constrained moreover by the restrictions of a short article, is a well-high impossible task. It is however important and also necessary to undertake research, discussion and dissemination, of such experiences on adaptation. So since we do not and can't have the multi-media materials here, in a literal sense, at the reader's disposal, we are going to handle this dissonance, so to speak, in the following way.

First we will reproduce in a schematic way, 'what' has been accomplished, in putting side by side the original German version and the adapted Dutch version.

Then, in respect of the crucial adaptations (of course there are always minor ones) we will consider why we did the adaptation that way.

Finally we offer an experimental evaluation of the adapted version. However, first of all we reflect briefly on the rationale of the operation in general.

General rationale of the adaptation

Why were we asked by Mr. Jongbloed, Director of the NIAM, the Hague, the Netherlands, to undertake such an adaptation of a foreign multi-media package in the late Seventies/early Eighties? An intriquing question. Could it also have happened at the beginning of the Seventies, or even earlier? We do not think so. In brief we will give three main reasons for this present initiative.

. Firstly, the 'media' as such have gained, with the coming of the 'information' age, a much stronger position in society. And since education reflects society, this interest in using media, had infiltrated teaching.

. Secondly, the role of education in society is changing, in the sense that, it is becoming more resource-based (for group-work) discovery learning etc.). This development is not new but over the years has assumed a better shape. Resource-based learning involves the availability of multi-media materials. Such materials, are however, very expensive to develop and to materialize. So resource-based education requires high investments.

. Thirdly, the conditions for cooperation between countries have grown. More travelling facilities and more communication in general are available. But conditions alone are not sufficient. There must also be people who appraise the situations as suitable opportunities to stimulate developments characteristic of their time. This is what has happened among ICEM-members.

A mutual combination of the three above mentioned factors we see as 'responsible' for the idea of the adaptation of a multi-media package for the curriculum of another country.

Wo where involved in adapting the multi-media package

The adaptation work was undertaken by 'Geography for Education', a doctoral study within the Geography Faculty at the National University, Utrecht. One of the former students, Drs. Aad Lindhout, was asked to set to work in cooperation with the author of this article and head of 'Geography for Education'.

A reviewing committee was formed consisting, in addition to the two authors, of a representative of the NIAM, the Hague, Drs. A. van Wieringen, the head of the Didactics for Geography, Drs. M. Wanrooij, and a physical geographer, a staff member of the Geographical Institute, Drs. P. Beukenkamp. The group met every five or six weeks, to discuss the progress of the adaptation work and the preparation of the evaluation of the adaptation.

The nature of the adaptation

In this section we have placed side by side the original German version and the adapted Dutch one. But before going into details we want to introduce the multi-media package to the reader. The package altogether consists of nine parts. A survey is given below.

- Glaciertour in the Engadin, a 16 mm colour-soundfilm (21 min.)
- Dynamics of the Morteratschglacier, an 8 mm silent colour film (5 min.)
- Glaciers at the Mont Blanc, an 8 mm silent colour film (5 min.)
- Glaciers and traces of the ice-age, a series of colour slides (20)
- A booklet with texts; three chapters;
  1. Glacier-catastrophes, Randa: four reports from daily newspapers; 2. Glacier accidents and rescue operations; 3. Pontresina, yesterday and to-day. Statistics concerning tourism in Pontresina.
- Eight working sheets:
  1. The visitors to the glaciers near Diavolezza
  2. The main street of Pontresina
  3. a. The number of overnight-stays in Pontresina
     b. Summer and winterseason in Pontresina
  4. The opening up of the Morteratsch region
  5. Glaciers (Morteratsch glacier)
  6. Types of moraines
  7. The ice-age
  8. Dammed lakes
- The basin of the Morteratschglacier, a sketch map on A-4 formate
- A panorama map of the Ober-Engadin
- A air-photograph of the Morteratschglacier

A teacher's guide

In table 1, on the next page, are given the materials of the multi-media package of the original FWU-version in the given order, as derived from the teacher's guide. Next to the FWU-version is the adapted Dutch one.

FWU-multi-media package: 'Gletscher in den Alpen' (Glacier in the Alps)
Target-group: 'Sekundarstufe 1', first grade, Sec. Ed.

circa 12 lessons (1)

1. Panorama map
2. Motivational film

3. Map: The basin of the Mort.gl.
4. Airphotograph of the Mort. gl.
5. Text: sections (?)
6. Dynamics of the Mort. gl. (8 mm)
7. Slide series: Mort. gl.
8. Working sheet: Mort, gl.

9. Glaciers at the M. Blanc (8 mm)
10. Slides series: remainder (?)
11. Working Sheets: remainder (?)

12. Text: remainder (?)
13. Motivational film
14. Panorama map.

Teacher's Manual

circa 4 lessons (2)

1. Panorama Map (1)
2. Motiv. film (2)

3. Map: the basin (3)
4. Dyn. gl. (6)
5. Slides, few (?)
6. W.sh., few (?)
7. Texts, few (6)
8. Motiv. film (13)

Teacher's Manual

1 lesson (3)

1. Motiv. film (2)
2. Panorama map (1)

Teacher's Manual

Dutch-version of the package: 'Glaciers and Tourism in the Alps"
Target-group: 'Brugklasse', first grade, Sec. Ed.

circa 12 lessons (4)

1. Panorama map
2. a. Sl. series: Spatial orientation
   b. Motivational film (16 mm)
3. Map: The basin of the Mort. gl.
4. Air photograph of the Morter. gl.
5. Students b.: Glacier-catastrophes
6. Dynamics of the Morter. gl.(8 mm)
7. Slide-series, nrs. 1-13
8. Working sheet 1: Glaciers and working sheet 2: Different types of moraines
9. Glaciers at the M. Blanc (8 mm)
10. Slide-series, nrs. 14-17
11. Working sheet 3: Ice-age and working sheet 4: dammed lakes
12. Text: Pontresina, yesterday and to-day
13. Slide-series, nrs. 18-20
14. Working sheet 5: The visitors to the glaciers near Diavolezza
15. Students b.: Statist. concerning tourism in Pontresina
16. Working sheet 6: The main street of Pontresina
17. Working sheet 7:
    a. The number of ovenight-stays in Pontresina
    b. Summer and winter-season in Pontresina
18. a. Working sheet 8: The opening up of the Morteratsch-region
    b. Slide-series: spatial orientation
19. Students b.: Glaciers accidents and rescue operations
20. Motivational film (16 mm)
21. Evaluative test

Teacher's Manual

circa 5 lessons (5)

1. Panorama map (1)
2. a. Sl.series
   b. Motiv. film (2)
3. St.b.: Glac. c. (5)
4. Dyn. gl. (6)
5. W. sh. 1 + 2 (8)
6. Slides 14/17 (10)
7. W. sh. 3 + 4 (11)
8. St. b.: Pontr. (12)

9. W. sh. 5 (14)
10. W. sh. 6 (16)
11. W. sh. 7 a/b (17)
12. Motiv. film (20)
13. Test (21)

Teacher's Manual

2/3 lessons (6)

1. Panorama map (1)
2. a. Slide-series
   b. Motiv. film (2)
3. St.b.: Glac. c. (5)
4. St.b.: Pontr. (12)
5. Slides: 14/17 (10)
6. Slides: 18/20 (13)
7. W. sh. 6 (16)
8. Motiv. film (20)

9. Test (21)

Teacher's Manual

6-5

As we have already suggested in the introduction, not all differences can be concluded from the side-by-side comparison of the materials. Therefore we make explicit below the differences in the Dutch adapted version compared with the FWU-original.

1. All the media material was translated, with three exceptions:
   - the title was changed: from 'Glaciers in the Alps' to 'Glaciers and Tourism in the Alps';
   - the sound track of the film underwent an adaptation;
   - some pages of the teacher's guide,which contained references specific to the educational situation in the FRG, were not translated.
2. For full use of the multi-media package, the number of 12 lessons was maintained. When partly used, the number was changed from circa 4 lessons into circa 5 ; and from 1 into 2 to 3 lessons.
3. The ordering of the media-material in the adapted version underwent a refinement, especially concerning the slides, working sheets and the reading texts.
4. A series of slides (10) concerning the spatial orientation of the location of the filming was added, just as a time-table of public transport [railways, 'Post-Auto' (public bus transport) and aerial cableways] between St.Moritz and Diavolezza, for the period 22.12.1979 and 12.4.1980.
5. The booklet with the reading texts was transformed into a real students-booklet.
6. A chapter of the teacher's manual was extended.

All the adaptations in a material sense were undertaken by the NIAM, the Hague.

In the next sction we will reflect upon the detailed rationale,thus the why of each of the adaptations mentioned. This will be done in the same order and under the same headings as above.

The detailed rationale of the adaptations

In this section the why of the adaptations we made and which are named above are considered.

ad.1. Translation

- The content of geography in education in different countries, even in Western Europe, is diverse. We cannot go into the reasons for this here, but it is important to take the diversities into full account when adapting materials for curricula in foreign countries. In the Netherlands a good deal of school geography is purely social and human geography. So in the Dutch version we paid explicitly more attention to social and human geography by means,among others, of a refining of the ordering of the material. This has also made it appropriate to change the name of the multi-media package from 'Glaciers in the Alps' into 'Glaciers and Tourism in the Alps'.
- The sound-track in Dutch was adjusted to allow for more content analysis of the film-images. For this the dialogue in Swiss dialect between the children was used as back-ground 'sound'. In so doing the film was brought up to a more sophisticated level. The reviewing committee held the view that the film with the original sound-track in German would have better suited a younger group than the target one. Though remaining in essence motivitional, the Dutch version of the film became somewhat more documentary than the original FWU one.
- In addition, notations about education in the FRG in the content of the Dutch adapted version of the teacher's guide were not useful.

ad.2. The number of lessons

When the partial version of the multi-media package is used the number of the lessons in the Dutch adapted version is higher, though not much higher, than in the FWU-version. This is because the Alpine region in Dutch geographical education is an important subject, getting much attention, not only in the physical geographical sense,

but also in a social and human geographical.

ad.3. The ordering

In both versions, the FWU as well as the Dutch one, there is in the ordering of the use of the materials a trend to move from physical to social and human geography. But in the Dutch version the ordering of the materials is more refined than in the West-German one. From the FWU-teacher's guide we learned that it is the task of the teacher to make the decisions as to the choice and order of use of the separate media-units.The order of use is to a high degree a factor of the time available, of the interest and level of knowledge of the students and also of the curriculum of the particular 'Land' (Federal State). Nevertheless a rough order is given in the West-German version for all the lesson-groups (12, 4, 1). The freedom is of course a good point and the constraints of the curriculum planning for the different 'Länder',(Federal States) are understandable. However, we take the view that a teacher is a busy person, focusing his attention not only on curriculum content in general and certain topics in particular, but also and at the same time on a lot of other and diverse matters (corrections, tutoring and guiding students, reading school-pamphlets, and many, many meetings etc. etc.). Thus we think, he/she does not have time and energy and moreover the mental rest to do the original work involved in researching and structuring the topic, viz. glaciers. After all, it is only one topic of a normally overcrowded curriculum.

That is why in the Dutch version the media-materials were arranged in in a strict order. We emphasize once again that this has not been done to short-circuit the teachers freedom, but even to promote it, in giving the busy teacher a more precise entry into the overwhelming range of media.

From a comparison of table 1, row 1 and 4 we can conclude that the series of slides and eight working sheets and especially, as well as the reading texts, are carefully integrated into the Dutch version. From an educational point of view we introduced,in doing so,also more variety in the teaching methods. And as to geography, a gradual transition from the physical geographical features to the social and human ones of the Morteratsch region was achieved.

ad.4. The slide-series on spatial orientation, and the accessibility of the region

A Dutch student by nature is not used to spatial orientation in mountainous regions, in spite,in general, of access to tv-information or even to vacation experiences.
Although the film has a typical motivational character and not a documentary one, we thought it nevertheless necessary that the location of the filming in principle must be understood. Thus a short series of slides on the spatial orientation in the Morteratsch region, the film-location, was added. The series is composed of public and private material and conceptualized in relation to the content of the film. In ten colour slides the route the children will take is illustrated: Rhaetian railway, Diavolezza-aerial cableway, Diavolezza-hotel, Morteratsch glacier, Boval-hut, Morteratsch-hotel. No text in the sense of a description of the pictures is given: only the geographical points to be met with in the film are mentioned in the accompanying leaflet.
This slide-series must be used before the film is shown. The series can also be very well used in combination with working sheet 8: The opening up of the Morteratsch regio (see nr.18 of the Dutch version, 12 lessons).

The time-table was added in order to gain insight into the (impressive) accessibility of the region under consideration. Exercises with this handy table reach from simple arrival/departure time planning and determination of transport frequencies,to complicated network-analysis.
The time-table can fruitful be used in combination with working sheet 8 (see nr. 18 of the Dutch version, 12 lessons).

ad.5. The student's booklet

In the adapted version, the student's booklet with the reading texts was explicitly transformed into a booklet for students. To us the FWU-version of the reading texts was too much a neutral brochure. A few adaptations were undertaken in the content as well as the form. Interest in the content of the texts is aroused, we

hope at least, by the added questions after each text or relevant text part. The questions are of a coginitive type ranking rather highly in Bloom's taxonomy. In the teacher's guide, the reading texts also get attention in that they are analysed and provided with questions.

The formate of the student's booklet was A-4. The lay-out was carefully done,and the letter-type large enough as an encouragement to do the reading.

ad.6. The teacher's manual

The teacher's manual is, besides some pages on education in the FRG, translated and partly rewritten in that the chapter about the media is extended. In the Dutch adapted version the content of each medium or part of each medium (e.g.slide-series) is described, just as in the FWU-version of the manual. However, in the Dutch version, for each medium the educational objectives and parallel to these objectives the behavioural goals are also given. However, to put the goals into practice, questions are formulated about the content of each medium (except about the motivitional film, but this is, in respect to its function, quite logical). The objectives, the goals and, self evidently, the questions,are carefully formulated and stated in a very direct, accessible way. The additions will certainly help the teacher to keep an eye on what he/she is actually doing. We thought it not desirable to withhold from the teacher this modern and quick orientation to his/her work.

Besides the adaptation of the content, attention was paid to the state of the teacher's manual. We have striven for an attractive brochure on A-4 format, and easy to read.

Summarizing the nature of the adaptations, we may say that they concentrate on two aspects in particular, the one being a strong accent on social and human geographical features, the other an attempt to bridge the gap btween the media-materials and the users (the students, as well as the teachers), thus promoting an improvement of the educational service.

Evaluating the adapted version

The next step is to be an evaluation of the adaptation. For that purpose we invited twenty-two geography teachers, physical as well as social and human geographical by academic origin, or 'all-round' geographers by their study, and asked them to take part in an experiment in geography in education. After a full display of all the media and a discussion about the aims of the experiment and questions about the time to invest, seventeen teacher's expressed their wish to take part in the experiment on evaluation of the adapted Dutch version. The participating teachers formed, in research terms, a fairly homogenous group.

The evaluation of the Dutch version will consist of the following activities.

A. The participating teacher will work with the multi-media package in a normal school teaching/learning situation at a day-school for formal education. The target group is as we have seen the so called 'brugklasse', the first grade of secondary education (see table 1).

Three main streams can be distinguished in working with the adapted multi-media package.

I. The package is fully considered as resource-based teaching/learning material. The teacher uses the material in the order he/she wants and also only those materials which make educational geographical sense to him/her.

II. The package is strictly used for about 12, 5 or 2/3 lessons respectively.

III. The package is used in a way which is lying somewhere between I. and II.

The working margin in this category is the broadest in the 12 lesson-version, the total number of acts there being 21.

B. For our purpose it is not necessary to register all the details of a teaching/learning process (moreover we think this is an impossible thing to do). Suffice for our evaluation-experiment are educational reactions derived from the actual teaching/learning situation. The participating teachers are to be invited by means of a precoded form to report on each lesson, in which a brief justification is included.

The experiment will be executed between September 1980 and January 1981. To clarify this broad time-range it can be said that the place of the topic in the curriculum can differ.

We hope to have the report on the evaluation-experiment ready by May 1981.

A final comment

The reader might be interested to know, as a kind of personal evaluation, about the feelings of the participating staff members of 'Geography for Education' about the adaptation work. We must admit that such an adaptation is rather difficult, in that not only is a lot of time and energy involved, but more especially because the 'adaptationals' are forced to enter via output, here a multi-media package, into the thinking processes of another person, from a foreign country moreover. It is far easier to relate to one's own conceptual ideas. On the other hand the adaptation of a multi-media package from the curriculum of another country is a very instructive adventure.

SPATIAL SCIENCES AND INFORMAL EDUCATION

not only the conveying of a message but also its contents are of importance

Article written for and published in
'STEDEBOUW EN VOLKSHUISVESTING'
62e jaargang, maart 1981, p.111-117

Drs. Hein Hoitink,

Department Geography for Education
Geographical Institute,
University of Utrecht,
Utrecht, The Netherlands

SPATIAL SCIENCES AND INFORMAL EDUCATION

not only the conveying of a message but also its contents are of importance.

Hein Hoitink
Department of Geography for Education
University of Utrecht, Netherlands

In many fields of society more and more importance is given to citizen counseling. Agriculture, health care, road safety, child rearing and governmental policy are only a few examples of informal educastion. Planning is a field needing special attention. Due to the democratization of planning policies, provision of information to the citizens is becoming an increasing necessity. It is of importance that the spatial sciences reflect upon the poblems of this information provision. Some aspects of this reflection will be descussed in more detail.

Citizen Participation

In the seventies citizen participation in the preparation of planning policies increased considerably. At all governmental levels, especially at the provincial and local levels, many experiments were conducted with citizen participation when preparing and formulating regional, land use and area plans respectively. A great variety of citizen participation procedures resulted, ranging from hearing citizens' opinions to active participation of citizens in the formulation of plans.

A feature that most of the citizen participation procedures have in common is that nearly all complement the excisting representative democracy. In other words, the chosen representatives of the provincial, regional or local governments remain the final decision makers. The citizen may think about and discuss the issues in question, but he may not participate in the decision making process.

This point of view has been put forward in many policiy recommendations concerning citizen participation, presented rather frequently during the last years. According to the authoritative advice of the RARO (Advisory Counsel of Physical Planning), for instance, citizen participation should always remain complementary to the official representative system; citizen participation processes that do not function accordingly are actually competing with the governmental system (1).
In reality governmental decision making is not fundamentally changed by the introduction of citizen participation; at the most there has been an adaptation to citizen participation. The same is true for the way in which plans are prepared and conceived. There has not been a fundamental change yet as a result of citizen participation in the methodology used when preparing plans. All that changed is that a new discussion partner has been created, the 'interested citizen'. This new partner is expected to adapt to the the existing rules of the game.

Naturally, this situation is not very satisfactory. It does not seem probable, however, that a change could soon take place in the way planners work, although this is being considered. The thoughts of Rubingh and Van den Berg on this matter are interesting (2). For instance, such a change could be sought in approaching the issues in question more from the concrete living conditions of the citizens. Possibilities exist at the micro level (area plans) but seem rather problematic at the meso and macro levels. Research will have to clarify matters.

High Demands on Interested Citizens

Participations in planning policy is very demanding for the citizen. He is expected to be an equal discussion partner when discussing problems concerning the use of space and possible solutions for those problems with professionals and policy executives. Both knowledge and insight are necessary. For instance, he will have to have sinsight in the functioning of the governmental planning policies and the possibilities citizen

participation offers. He will have to be knowledgable about and have insight in spatial issues which, caused by changes in the spatial structure, in their turn induced by changes in society, lead to the preparation and design of governmental plans. Also, he must be able to foresee possible consequences of the measures proposed by the plans and to evaluate these.

Knowledge and Insight Gap

The majority of the Dutch population does not meet these high demands. Generally it is acknowledged that there is a knowledge and insight gap between the government and the population. This gap causes various problems. On the one hand, planners complain hat the input of interested citizens hardly comes above the level of 'complaints about gutters'. In other words, many of the reactions concern daily, very concrete problems of the people which, whether or not related to problems of planning, all concern the direct living evironment. This situation occurs especially when citizen participation takes place at the levels of area and land use planning. On the other hand, interested citizens complain about the theoretical, abstract and generalized character of the plans, which at first sight seem to have little to do with reality. Also, most documents are too difficicult to read and therefore are incomprehensable as they have been writtern 'by government employees for government employees'. The knowledge and insight gap also restricts the number of interested citizens at citizen participation procedures. This is so especially for citizen participation at the national level. A team of the Sociology Institute of Amsterdam, which has conducted research concerning citizen participation during the development of the 'document on town development', concludes that the low level of participation is partly a result of the fact that both the issues and documents are hard to understand (3). Only those who have insight in planning issues and therefore are able to understand policy documents, might become interested enough to participate in a citizen participation procedure.

In the literature various suggestions are made how to bridge the knowledge and insight gap. As early as 1969 Funken and Rontelтap point to the role formal education could have. They even suggest that the subject of geography in its classical form should be eliminated for once and for all, that it should be transformed into a subject concerned with spatial issues (4).

Also, they emphasize the importance of informal education such as citizen counseling. According to them, the goal of citizen counseling should be to make understandable daily spatial issues. By obtaining this insight the population could reach a balanced opinion as to how their interests are influenced by certain planning measures. 'Education permanente' was suggested as another possibility to bridge the knowledge and insight gap. The introdcution of issues concerning planning and citizen participation in the educational programs of, for example, the Open School, community work and Teleac could be a significant method to bring the problems closer to the people and to break through the often paralyzing feeling of powerlessness.

All three suggestions mentioned above are extremely valuable and have already been put into effect on a limited scale. Their effectiveness, however, is not the same. Formal education and 'education permanente' are mainly effective in the medium and long run and only bring about a general and broad improvement of knowledge and insight in the field of planning. Specific citizen counseling, however, can be effective much faster and can be limited to the one theme. For a quick and effective approach to the knoweledge and insight gap hampering citizen participation procedures, therefore specific citizen counseling is of prime importance. Also, it is easier to bridge a knowledge and insight gap concerning a limited issue than one concerning general knowledge planning issues. Therefore, we will from now on limit ourselves to the aspects of specific citizen counseling.

Much Attention for Methods of Specific Citizen Counseling

Today there is a steady stream of publications based on experiences and research that concern citizen participation. In most of these publications attention is being paid in greater or lesser extent to information distribution in general and to citizen counseling in particular. Especially disciplines like information science, agology and mass communication are active in this field. Citizen counseling is considered an essential precondition for citizen participation to succeed. Korsten, for instance, underscores the importance of information distribution as a way to stimulate participation. To him the formulation of a special media plan is essential (5). A media plan contains information about the type and size of the target group, the aims of citizen counseling, the time and frequency of citizen counseling, the type of media used and a media-cost-analysis.
Also abroad attention is paid to research in the field of information distribution for citizen participation. The Center for environmental Studies in England, for instance, did research in this field under supervision of Stringer (6). The main goal was to find the right communication means and communication strategies.
There are two aspects of information distribution or citizen counseling to be considered: information content and communication.
Publications in the field of citizen participation - citizen counseling mainly emphasize the aspect of communication. The central focus then is: How to reach the people and how to involve them in citizen participation. These questions imply a search for the right goals and means. Suggestions are made, for instance, how to determine the means of communication, time and place of communication, the development of the right communication infrastructure and the choice of the target group and goals.

Much less attention has been paid to information content, i.e.: What do we tell the people once they have been reached? The answer to this question is often limited to advice about the presentation, the level of difficulty and the use of language. The communication sciences give no advice on the content of the message. They rightly leave this to planning professionals. As a consequence, the sciences of planning, geography and urban engineering must reflect on issues concerning counseling for citizen participation. They should determine which research results are relevant for the bridging of the knowledge and insight gap and be prepared to do additional research if necessary.
The various policy recommendations, put forward over the past years, show a similar picture as the scientific publications. In addition to these recommendations, a variety of methods to be used in citizen counseling are suggested. Regarding the information itself, it is generally required that it is understandable, legible, attractive, objective and complete and that it should concern subjects as plan content, the procedures of plan presentation and citizen participation, the functioning of (government) policy and the effect of citizen participation. Again, it is considered (often implicitely) the task of professionals in the fields of policy execution, planning and spatial issues (planners, urban engineers, geographers, lawyers, etc.), to determine the precise contents of information. But no agreement has yet been reached as to who is ultimately responsible for the contents. According to the RARO, the

government should take the responsibility. Others would prefer information from uncommitted groups for reasons of objectivity. From my point of view, this is where Universities come in.

Tasks for the Spatial Sciences

It will be clear that, no matter which institution has the (political) responsibility for citizen counseling, it are the spatial scientists who

must concern themselves with the contents of citizen counseling. Problems and measures concerning the use of space are after all the main theme of citizen participation. It is this task that obliges planners, geographers and urban engineers to turn to the communication sciences for advice. Then they must reflect upon the problems of counseling for citizen participation, specifically upon content determination and information design and development. This, because results of planning and geographical research are not suitable for transformation into a message for citizen counseling. Verduin-Muller points this out by discrediting the often heard opinion that the development of information material for education and citizen counseling would be the 'translation' of results of scientific research. She speaks about an original process (8). This means that, when determining the content of citizen counseling, information must be 'developed and constructed' in accordance with the goals of citizen counseling and the target group, using 'data' resulting from scientific sources. Van den Ban, too, states that the contents of citizen counseling are closely related to the goal of counseling and the target group and also with the strategies of citizen counseling. Relevant research results often must be integrated in a creative way before they can really be used (9).

Need for Citizen Counseling Trained in Spatial Issues

According to Van den Ban it is necessary that the citizen counselor has knowledge and insight in citizen counseling, but also he must be knowledgable in the field he is to give counsel in (10). Indeed, this double proficiency is usual when some types of counseling are concerned, for instance in the field of agriculture or health care, but this is not always the case for citizen counseling in matters of planning. At present, most governmental citizen counselors have a journalistic background and/or are knowledgable in the field of (mass) media. They are able to translate governmental documents riddled with jargon, making them accessible to a larger public.

When counseling for citizen participation in the preparatory stages of planning policy making is concerned, the citizen counselor with a mere journalistic backgrond must turn to (planning) professionals. The necessary specialized research results, namely, often are just as inaccessible to the citizen counselor as to the citizen themselves. However, as has become clear in the above, citizen counseling strategies, the target group and the goals must be taken into account when determining the content of the massage. In general the planning professional is insufficiently equipped for this purpose. He is used to write for planners as a planner. This results in messages which, regarding both content and structure, do not meet the goals of citizen counseling nor the needs of the target group. The message of the citizen counselor does, in general, reach the people as an attractive presentation, good means of communication and agogic-didactic techniques are used, but this message will not have the intended effect. It is like administering a medicin of which only the shape and taste but not the active ingredient meet the needs of the patient. No solution for the problem, the knowledge and insight gap, are offered.

Concluding we can state that those who dedicate their time to counseling for citizen participation purposes must have access to the results of spatial scientific research and must be able to create information contents using those research results, while taking into account the target group and the citizen counseling strategies. The organization of this information and, in consideration with this, the choice of the right communication channels, should take place in cooperation with presentation and communication specialists. If the citizen counselor or citizen participation coordinator is expected to present the information to the target group personally, he must also have agogic didactic qualities.

Increasing Attention for Citizen Counseling in Education

The present generation of students realizes the need for professional citizen counselors. More and more graduate students in geography and planning, for instance, choose communication or mass communication as a minor. Through this they do obtain the necessary insight in the methodology of citizen counseling but obviously not in how to determine the information content for citizen counseling. For ample time, however, there has been a specialization within the spatial sciences where the necessary expertise can be found: education geography. At Utrecht University this specialization is now concerned with both education and citizen counseling and has therefore been named 'Geography for Education'.

Knowledge and insight in 'geography for education' is thought indispensible for geography teachers (in addition to being schooled in their subject matter and in pedagogic-didactic aspects). After all, it is the task of the geographer to make his subject serve his pupils and the educational goals. What is valid for teachers is generally also valid for citizen counselors. The department 'geography for education' at the Utrecht University tries to meet the demands for professional citizen counselors and citizen participation coordinators by offering a broader choice within the study programm. Also, it should be possible to consider post-schooling projects for those who are already working as citizen participation coordinators, focussing on how planning can be made more accessible to interested citizens.

Counseling for Citizen Participation during the Preparation of a Regional Plan

Using an example of counseling for citizen participation during the preparation of a regional plan, we shall indicate briefly which types of global goals, target groups and information content might confront a

citizen counselor or citizen participation coordinator in the various stages of the preparation of a plan. The example will be limited to citizen counseling on the subject matter with which citizen participation is concerned. The necessary information on procedural and governmental aspects will not be considered. The example chosen is the procedure used during the development process of the regional plans 'Zuid-Holland Oost' and 'West', in which the writer participated.

Specific Goals of the Plan

In this stage the Provincial Government, taking the general goals of planning into account, determines which specific goals ought to be set in order to encourage or discourage the existing spatial situation and developments of the region. When formulating these goals, discussions tend to be rather political. Therefore, citizen participation must have a political touch. For this reason, political parties or members of the Provincial Government ought to be active in coordinating citizen participation in this phase.
During this stage, citizen counseling should aim at a) stimulating citizen participation when determining the specific goals or the plan, b) making the subject matter of the citizen participation procedure accessible to the interested citizens and c) giving an account of the consequences of citizen participation.
The first aim can be achieved by paying extra attention to the spatial situations, developments and problems that most concern the inhabitants of the region during the initial citizen counseling meetings (which are part of the citizen participation process). This will stimulate the motivation to participate. Also discussion points could be created by giving a few examples of possible solutions for spatial issues. In this phase the target group ought to be the entire population of the region.
Next, in order to achieve the second aim, it is necessary to give information about the causes and consequences of the spatial issues of

the region and about possible solutions. This, so that the citizens will be able to form well based opinions regarding specific planning aims. It will also be necessary to pay attention to specific questions of the citizens. Therefore, citizen counseling is often incidental and specific in this stage, and is meant for interested citizens only.
At the end of this stage, all interested citizens must be informed what were the results of citizen participation. In other words, the citizens must be informed to what extent the citizen information procedure has influenced the goal setting decision making process.

Initial Design of the Plan

In this stage the Government employees design the regional plan (initial design). A proposal is made based on the most desirable developments. At the same time measures are suggested that could stimulate these developments. Interested citizens are asked to evaluate the developments and measures proposed. During these discussions both the material and immaterial interests of the interested citizens will be of more importance than in the phase of goal setting. This because now future changes in the use of space will become clearer.
Generally speaking the goals of citizen counseling in this stage are the same as those of the goal setting phase. In the first place participation should be encouraged. Then the subject matter of the citizen participation ought to be made understandable. Also, account must be given of the influence citizen participation has had on the decisions.
For the same reason as in the goal setting phase, the content of citizen counseling must include spatial issues (including causes and consequences) and the solutions proposed (contents of the initial design). However, taking the specific goals of the plan and the target group (inhabitants of the region as the interest group) into account, the future changes in the use of space must be made as clear as possible. In many cases, however, it will not be possible to clarify future spatial

developments in detail, as this is contrary to the global, indicative character of the regional plan. In those cases it would be possible to use other, already finished developments as an example, so that the consequences of the regional plan would become recognizable. One of the main problems of counseling for citizen participation is how to make a regional plan accessible while keeping the global and abstract characteristics intact. Also, information must be available about alternative measures. As in the previous stage, citizen counseling will be directed to the whole population of the region at the start of the citizen participation procedures, whereas later on more attention will be paid to the needs of the interested citizens only. Also, at the end of this phase, it ought to be made clear what influence citizen participation has had on the final content of the regional plan.

Making the Plan Definite

The Provincial Government makes a regional plan definite. Beforehand, though, the plan is available for a few weeks to enable the citizens to look it over. Anyone is free to make an appeal in this period. This possibility must be well publicized, no other citizen counseling is necessary at this time.

The Execution of the Plan

Except for some specific state and provincial tasks, it is the municipalities that must put the measures laid down in regional plans into effect. In order to do so, more detailed plans are made, the land use and area plans. The procedures and content of citizen participation and citizen counseling are similar to those used when developing regional plans. An advantage, however, is that land use and area plans are less abstract, thus facilitating citizen counseling. Also, the measures to be

taken concern very concrete spatial activities concerning a limited number of citizens only. Therefore it is advisable to discuss the (work) plans with the citizens concerned, as this will make execution easier. As a result, citizen counseling in this stage will mainly be of an urban engineering nature and concern very real projects that are ready for execution.

Until now information content has been emphasized. Besides the content, attention must also be paid to the presentation. When trying to bring information concerning spatial issues across, maps, graphics, images (photographs, slides, films), models and the like are often more useful than text.

It will be clear that, if a citizen counselor is to meet the above mentioned requirements concerning the goals and content of counseling for citizen participation, he/she will have to be well informed on the issues of regional planning and all that is related to regional planning. He/she must be able to develop information that meets the needs of the target group. Also, he/she will usually function not only as a communicator of information but also as the coordinator of the whole citizen participation procedure which has many characteristics of a learning process. He/she will have to be able to get along with the regional population in an educative situation.

Conclusion

The aim of this article has been to emphasize that the spatial sciences must reflect on the creation and determination of information content for purposes of counseling for citizen participation and that there is a need for scientific professional citizen counselors or citizen participation coordinators (trained in the spatial sciences) who know how to create and communicate information. Only that citizen participation procedure was considered, which departs from the viewpoint that citizens are active participents, i.e. that they reflect upon and discuss the relevant issues

with the government during the preparation of the planning policies. At present this is the most popular view of citizen participation. A problem is created, however, by a knowledge and insight gap present between the citizens and the government. This gap can be bridged by education, community work and citizen counseling, i.e. through the communication of information. In this case the citizen must adapt to the government. Also the government can adapt to the citizen. This could be done, for instance, by taking the real life situation of the citizens as a point of departure when preparing a plan, i.e. to base the plans on wishes of the citizens when their own living environment is concerned. The possibilities for carrying this out are different at each governmental level and for each phase of the plan preparation procedure.
In our opinion, both strategies ought to be used. The advantage of the last strategy is that the contribution of the citizen participants need not be at such a high level of abstraction. This will lower the threshold for participation radically.

Footnotes

1. Raad van Advies voor de Ruimtelijke Ordening. Advies over inspraak op de drie niveaus, febr. 1978, blz. 10.
2. G.J. van den Berg, A. Rubingh. Waartoe inspraakverlening bij streekplannen. Groningen 1979.
3. Zie: Verkenningen inzake de inspraak bij de Verstedelijkingsnota. Sociologisch Instituut, Universiteit van Amsterdam, nov. 1977.
4. J. Funken, R. Ronteltap. Naar een democratisering van de ruimtelijke ordening. in: Stedebouw en Volkshuisvesting, dec. 1969, blz. 496. In today's school geography, more and more attention is paid to issues concerning the use of space and planning. In 1980 'Planning and Citizen Participation' was part of the final, secondary school, exams. Also, educational material concerned with this subject and entitled 'Grondig Meedenken' was developed by the Department Geography for Education of the Geography Institute of Utrecht (G.ED. project nr. 8, PPR-II).
5. A.F.A. Korsten. Het Spraakmakend Bestuur, Den Haag, okt. 1979, blz. 124.
6. Zie: Peter Stringer e.a., Linked Research Project into Public Participation in Structure Planning. University of Sheffield, Researchpapers v.a. 1974.
7. Raad van Advies voor de Ruimtelijke Ordening a.w., blz. 41.
8. H.S. Verduin-Muller, Thesis on designing and dissemination of geographical knowledge. Paper, the Commission on Geographical Education, 23rd. Congress International Geographical Union (IGU), Moscow, USSR., July/August 1976.
9. A.W. van den Ban. Inleiding tot de voorlichtingskunde, Meppel 1979, blz. 196.
10. A.W. van den Ban, a.w., blz. 29.
11. Political parties hardly ever participate in citizen participation procedures. The chosen representatives usually have their employees confront the citizens. Yet, many agree that citizen participation is a reaction to the malfunctioning of the representative democracy. Depoliticizing citizen participation will not improve its functioning.

COMPUTER ASSISTED LEARNING IN GEOGRAPHICAL EDUCATION IN THE NETHERLANDS: INITIAL STEPS ON VIRGIN SOIL

International Conference on
Computer Assisted Learning in Geography,
on 11th, 12th, 13th April 1983.
International Geographical Union,
Commission on Geographical Education,
University of London Institute of Education

Drs. Jan van Beckum,
College de Klop,
Utrecht, The Netherlands

COMPUTER ASSISTED LEARNING IN GEOGRAPHICAL EDUCATION IN THE NETHERLANDS: INITIAL STEPS ON VIRGIN SOIL

Contents

	page
Summary	8- 1
Introductory remarks	8- 2
1. Backgrounds: education-political hesitation	8- 3
2. Conditions	8- 5
3. 'Micro-climatic' circumstances	8- 7
4. Initial steps	8- 8
5. Dutch software	8-10
6. Conclusions and recommendations	8-11
Literature	8-13
Appendix: Survey of Dutch geographical software	8-14

COMPUTER ASSISTED LEARNING IN GEOGRAPHICAL EDUCATION IN THE NETHERLANDS:

INITIAL STEPS ON VIRGIN SOIL

Drs. J.D.F. van Beckum, Geography master in the "College de Klop", Utrecht, a Grammar School for HAVO and VWO.

Private address:
Nr. 10, Arie van de Heuvelstraat,
3981 CV Bunnik, the Netherlands.
Tel.: 03405 - 64610

Summary

This paper deals with recently started C.A.L. in Geography in the Netherlands in secondary and tertiary education.
Backgrounds and conditions outline the environment in which the first steps were taken. An overview is given of the initiatives that have been started and of what has been achieved until now.
As far as C.A.L. goes, the education geographer is showing a good appetite: this - in combination with earlier developments in Belgium - might lead to a growing demand for Dutch programs.
Without losing sight of reality and taking into account the - internationally - low facilities, optimism is justifiable with regard to further developments of C.A.L. in the Netherlands.

"Teachers who imagine that the introduction of C.A.L. will allow them extra time in the staff room ..... are mistaken."

(Shephard *et al.*, 1980, p. 113)

Introductory remarks

Although the title of this paper could be a reliable indication of the proportions of its contents, I would like to tell something more about this rather new phenomenon for education geography in the Netherlands. I shall try to sketch briefly the development of informatics education there against a background of conditions that have exerted a great influence on the diffusion, structure and quality of C.A.L.
In doing so, I shall outline the matrix in which education geography, being one of the pioneers, is trying to root amidst earlier established disciplines. While here and there footpaths are visible, a frontier mentality prevails on desert land: individual freedom in all activities with their risks and uncertainties but unquestionably above all their advantages. In this way an impression is created of the situation met by the individual teacher of geography in the Netherlands who has decided to explore the possibilities of C.A.L. That is the situation in which I myself was, when - at the beginning of 1982 - I came into contact with microcomputers. Initiatives taken afterwards form the framework of the next section followed by a summary of what has been developed and achieved in the Netherlands sofar.
Conclusions and recommendations complete this paper.
But I will not continue without first thanking Mrs. Professor Dr. Henriëtte Verduin-Muller of Utrecht University for affording me, though not a member of a university staff in geography, the opportunity to present this paper. It is owing to her stimulating and guiding discussions that several foot-prints made by the initial steps referred to in the title, might be my own.

Bunnik, April 1983

1 *Backgrounds: education - political hesitation* [1]

It is not my intention to explain that and why an education-political choice should precede the computerising of education. But I do think it my task to outline an atmosphere that arises when that particular choice has not yet been made - as is the case in the Netherlands.
Rather than giving an enumeration of reasons and circumstances to explain this, I would like to mention some facts typifying the environment in which C.A.L. in the Netherlands is shooting up.

1. In the first place at the end of the sixties a Dutch programming language was developed in behalf of education, the so-called ECOL, acronym for: Educational Computer Language. This language designed for the modernisation of mathematics managed to escape attention to the extent that the committee in charge of writing a draft note on "Education and Information Technology" in May 1982 puts the question to the government whether a Dutch (!) programming language should be developed before starting a policy with regard to informatics education.

2. A second example: This very year the Department of Economic Affairs (!) will give financial aid for purchasing 10 microcomputers for each of a hundred secondary schools, which will be allowed to experiment freely for a period of two years. After that pioneering stage, more conducted projects will be started in co-operation with the Ministry of Education and Sciences.

3. And the amount the government has reserved for the coming years for a limited number of experiments in the total field of C.A.L., is in violent contrast to the investments made every year for computer education in the United Kingdom, France and even in states like Minnesota.

---

[1] The author thanks H. Koppen of the Foundation for Curriculum Development, Enschede, for his contribution.

On account of these facts we can - in all soberness - state that, first, an influential choice, namely the preference for one or a few education computer languages has been delayed and, secondly, that people still disagree on the question as to in what direction education of informatics should go. It will be clear that this deferred decision has its effects on the development of the computer education policy.
Thus, the Netherlands does not yet recognise national development projects in behalf of C.A.L., nor are there any funds to draw on, as little as there is any industry willing to take any risky initiatives in the field of education.
There are, indeed, enthusiastic teachers trying to convince their Boards of Governors that microcomputers in the school should be given a chance. And they are having more or less success. The results are that, in a growing number of secondary schools one or a few microcomputers have been put into use, often because of the possibilities they are said to have for school-office purposes. In this way the universally praised principle of far-reaching autonomy in the Dutch educational system leads to a few - in this case less favourable - secondary effects. We mention the great variety of makes, types and designs of micro-computers that populate an unknown number of schools, the lack of a general view and co-ordination of what is being tried out, and also the pioneer level of software in circulation. Exchange of programs is still imperfect and is therefore only slight, while the compatibility of software is rather decreasing than increasing.
The most appropriate way for a teacher to meet with support in developing more know-how is to join a union of users of a particular type of microcomputer rather than an institute of education or a professional organisation.
In the autumn of 1982 the Centre for Education and Information Technology was established at the Twente University of Technology [2]. This centre, financed by the Ministry of Education and Sciences, will have to become the central authority for the co-ordination of the development in the education-technical field.

---

[2] Centrum voor Onderwijs en Informatie-technologie, COI, Technische Hogeschool Twente, Enschede, the Netherlands, tel.: 053-892190.

In addition, it will serve as an information centre and clearinghouse for courseware and as an advisory centre for the Minister. At the same time, the first information centre for C.A.L. was instituted, namely "TEACHIP-SOL" [3] intended to function as a regional point of support, the latter project being the result of private enterprise. The TEACHIP Foundation, for C.A.L.-minded teachers only, managed to get accommodation in the buildings of a public institute of education, the Teachers Training Centre "SOL" of Utrecht. Promotion of insight into and the application of computers in education are the main goals.
Another union, "DIDACOM" [4] with similar objects in view accentuates the didactic demands on hardware and software.
Both institutions are of recent date. The older one, TEACHIP, is going on to its third birthday.

2 *Conditions*

It might be clear that in addition to individuals publishers have also landed in an uninspiring situation. For, the postponement of the choice of a programming language plays tricks on all parties concerned. It blockades the set-up of purposeful post-graduate courses, and those who disregard this fact risk backing the wrong horse. And the Dutch-speaking market being small enough, the attractive power of C.A.L. for commercial producers of software will be very low. Yet, in the mean time, two educational software publishers have set to work in this field [5].
But in the attractive information portfolios no more than a hundred educational programs are announced for the two industries together. This number is the sum total of all disciplines, all kinds of education and all educational levels. Among these, not one program is designed for geography.

---

3) TEACHIP-SOL informatiecentrum, Archimedeslaan 16, Utrecht, the Netherlands. Tel.: 030 - 525111.

4) DIDACOM, address: c/o Avenbeek 98, 2182 RZ Hillegom, the Netherlands.

5) Those are: Malmberg, Den Bosch: Malmbergs Educatieve Software - MES and Educaboek, Culemborg: Educatieve Telesoftware Systeem - ETS.

Therefore, initiatives to develop geographical software will have to come from private individuals. But the number of geographers engaged in activities that may be reckoned among C.A.L. is still very limited. In fact, an appeal addressed to geographers with "computer experience" in November 1982 yielded only three reactions, including my own, despite the fact that it was placed in the most read periodical for geographers in the Netherlands [6].

Private initiative encounters very soon the next problem: software designers with the know-how required are mostly the very first computer freaks: they develop the most ingenious, but pseudo-educational games. And teachers having at their disposal enough educational experience for the development of software and courseware, lack the programming knowledge for producing functional material.

The fact that commercial editors are looking forward to programs in the sense of manuscripts to be published reasonably explains why the birth of the first geographical computer program "Made in Holland" has been delayed for a while.

Within the atmosphere outlined above, the temptation is not imaginary to introduce foreign software into Dutch education of geography. As far as we know, no such introduction has taken place so far. Should foreign programs make their appearance in the Netherlands in the near future, it will be necessary to apply them cautiously, because

- first, Dutch education has - without wishing so - the task to justify the purchase of computer hardware and software as long as the governmental decision mentioned earlier has not relieved it of this duty. And the opinion prevails that C.A.L. - if it is worth being aimed at after all - should contribute to the solving of bottle-neck situations in education, to which existing educational appliances offer no reasonable solution. That includes that justification of acquisition of the above hardware and software cannot be borrowed from programs coming from countries where different criteria and educational systems are in force;

---

6) De Nieuwe Geografen Krant, monthly periodical of the Royal Dutch Geographical Society, circulation 5500 copies.

- secondly, the curriculum of geography in Dutch Grammar Schools differs on certain points from what is dictated, for example, in the United Kingdom or the United States. In the Netherlands no fieldwork, no research and no working up of statistics are obligatory. And if such work does occur, it is due to private initiatives within the large margins the educational system allows, but, of course, no rights can be claimed;
- thirdly, it seems to us that foreign software should not be introduced before experience has been acquired with software produced in Holland, so that a well-founded selection can be made.

3 *'Micro-climatic' circumstances*

In the previous sections an attempt has been made to describe the education-political, financial and technical environment the geographer in the Netherlands meets when he gets interested in C.A.L. But also the atmosphere that has grown inside schools around the phenomenon 'microcomputer' defines the current state of affairs as far as geography goes. Speaking from my own experience I will not deny you the following story, which many teachers of geography in the Netherlands will recognise.

As occurs in many Dutch secondary schools, a microcomputer was procured by our school because of the multi-purpose-function ascribed to it in the manuals. This Apple II was placed in the school's office, complete with 'printer' and 'dual drive floppy disc'. But even before the office staff had made themselves familiar with the brand-new hardware, colleagues of mine from the disciplines of 'physics' and 'mathematics' seemed to have appropriated the monopoly of knowledge and use.

A course of "computer science", as everywhere else larded with needless and threshold-raising mathematical instructions, restricted pretty soon the joining of that noble guild of computer experts.

Not being convinced that the use of computers should be reserved exclusively to the science subjects, I took my bearings on the principles of computer-languages, via the instruction book "BASIC FOR BEGINNERS" [7].

---

7) Prooijen, J.P.A. van, (1980): BASIC voor beginners. Deventer-Antwerpen, Kluwer Technische Boeken.

After an hour's study of the first 15 pages I realised I could design a "program" for interactive explanation about how to calculate population density. On the ground of the same knowledge acquired "software" about calculation of scale and of birth-rates was added. No heroic acts, that is true, but the first thresholds were levelled and the once magic-looking hardware became accessible to me.
At this stage I gained a certain status among the 'self-evident' experts in our school, although my vision of fields of application and didactics of C.A.L. differed clearly from established views. Relying on the knowledge of colleagues and making an appeal to my autodidactic abilities, I could stand the cataract of developments.

4 *Initial steps*

The author's first article in the Netherlands about C.A.L. and geography is about to be published [8], while in February last he delivered a first lecture on the same subject. This introductory lecture was primarily meant for a regional meeting of geographers in Utrecht, but it attracted an even larger number of interested teachers from all over the country. At this - one might say historic - meeting an intensive exchange of views took place. The subsequent discussion made it clear that

- C.A.L. in geography in the Netherlands is lacking (April 1983) in almost all kinds of information transfer and on all educational levels;
- The Ministry of Education and Sciences, being the appropriate source of facilities concerned in the Netherlands, will provide at short notice no financial support in behalf of C.A.L. in general and at longer notice perhaps only little;
- At the end of the sixties, in foreign countries a computer-assisted geographical information transfer was started and as a consequence ample educational knowhow in this domain was acquired.

---

8) see 'De Nieuwe Geografen Krant', April 1983.

Realising those facts, a group of Dutch geographers has now been formed with the intention to introduce C.A.L. into Dutch education of geography. As yet this cluster, the ASCON group [9] is making a reconnaissance expedition in the gap between what has been achieved abroad and the present situation in their own country.

Out of this ASCON initiative plans were born for a national course to make interested geographers familiar with computer hardware and - if necessary borrowed from other disciplines - the various types of software. In March the first group of teachers started that course and it must be said that the course attracts an unthought-of interest. For the time being it will be repeated every month.
During that first lecture in February contacts were made to guarantee a number of lectures and workshops about C.A.L. in geography in Teacher Training Centres in the nearer future. A post-graduate course on the same subjects is also being prepared, organised by the Royal Dutch Geographical Society.
In the Netherlands the interest being surprisingly large, an important 'step' is the plan to record the marks of interest and the increasing knowledge from the moment they arise. Now that a general view has been obtained of geographers interested in practising C.A.L. in the Netherlands, co-operation may easily be brought about in the years to come. The ASCON initiative is also responsible for the appearance of the first geographical software in the Dutch language. Although these are no copies of existing programs, the topics might be called 'classic', such as "Demography", "Climates", "Scales" and "Relations". Around these themes interactive, tutorial programs have been developed, designed for problem situations such as were interpreted by the co-operating Dutch education geographers.
From the foregoing it can be derived that during his training, the Dutch student of education geography could acquire neither knowledge of nor experience in C.A.L. in his own country. The possibilities of practical work in institutions abroad do exist but the number of students making use of them is very small.

---

9) ASCON, acronym for Aardrijkskundige Software en Courseware Ontwikkeling (Geographical Software and Courseware Development).

At the moment the Teachers Training at the Geographical Institute of the State University of Utrecht, is the only one that offers an introductory lecture with workshop, being a standard portion of the curriculum since the Autumn of 1982.
Internal publications of the Geographical Institute of the Liberal University of Amsterdam, and of the Teacher Training Centres of Zwolle and Sittard indicate that education geography orientates itself on a broader front.

5 *Dutch software*

Being aware of the position we have in relation to foreign countries, we shall not speak highly of the level of software reached until so far in the Netherlands. A short comment, however, will be given about that first Dutch software. Two weighty arguments underlie the chosen structure, namely

- computer software will have to prove that it can offer reasonable alternatives for traditional education appliances in didactic bottle-neck situations;
- education geography forms part of an educational movement that accentuates in ample measure the differentiation of the students of a class.

A third starting point of different order but nevertheless not to be ignored is the fact that, at best, the teacher of geography has access to [10] one or a few, mostly stand-alone microcomputers. In regular secondary education subject rooms with 6 or more microcomputers are an exception.
In the current Dutch educational system a lot of problem situations occur mainly at moments at which students change type of school, set of subjects or level. Such irregularities combined with the arguments mentioned before, make it clear why individual application of C.A.L. was chosen. Memory capacities limit the size of programs to 16 or 32 Kb of most of the current microcomputers.

---

10) We accent 'access to'; geography subject rooms with their own computer hardware do not exist in the Netherlands (1983).

Therefore, the available software consists of tutorial dialogues, alternated with drills and tests to complete, revise or brush up the subject matter. Simulations are being designed concerning 'transport' and 'location of settlement'.
In fact, it is true that from now on in the Netherlands, too, the supply of geographical software is growing month by month (see the Appendix for a survey of Dutch Software).
In view of the early stage, results can hardly be reported.
Bundling of individual experiences is needed at short notice.
Reactions of my own students stimulate me to continue my present path.
A marginal note should be made here that the school where I'm working has a comparatively favourable computer equipment and time-table facilities [11]. But other education geographers, too, react positively to the initiatives and software. We should go too far if we asserted that the Dutch geographer is acquiring a taste for C.A.L., but he is showing a good appetite.

6 *Conclusions and recommendations*

Summarising we come to the following conclusions:

- Both literally and figuratively C.A.L. in the Netherlands finds itself in a stage of pioneering in which there is plenty of room left for all sorts of hardware, systems and programming languages. A large amount of unco-ordinated and small-scale activities take place in most cases owing to private initiatives. In all this, geography takes up - to a certain degree - a positive exceptional position: in fact, the handicap of relatively late starting might turn out to be an advantage to education geography in the long run.

- Commercial software publishers hardly seem to be interested in the potential market for education of geography in the Dutch language. Particularly the low priority the Ministry of Education and Sciences has attached to computer assisted learning so far underlies this situation (April, 1983).

---

11) Computer subject room equiped with 6 CBM Commodore 4.0 microcomputers with cassette-recorder each, and one printer, next to this equipment one Apple II with floppy disks for the school's office, the computer being accessible to teachers.

- Awaiting the approach of C.A.L. in geography in the Netherlands by professional institutes, a number of geographers have secured contacts and intellectual support by joining the ASCON group. During the stage of pioneering this group might be the reference address for the geographical C.A.L. movement in the Netherlands [12].

The education geographers are becoming conscious of the relative arrears they are in with regard to C.A.L. At the same time we are pleased to note that geography is breaking out of a vicious circle in which "lack of know-how" forms an essential element.

Finally, we would like to make some recommendations in support of the developments that have been set going.

1. Study facilities should be started at short notice for the theory and methodology of information provision in institutes of Geography of Education in behalf of the use of computers both with regard to C.A.L. and the use of data-banks.
2. It is of great importance that education geographers should be involved in the "Hundred schools experiment" that will start in the Autumn of this year. The attendant facilities will form a welcome completion to initiatives undertaken in a different context.
3. The sections "Geography" of the various Teacher Training Centres should orientate themselves, more intensively than they have done, on C.A.L. in behalf of the present teaching of geography.
4. It is necessary that the Royal Dutch Geographical Society should create facilities to support the development and diffusion of C.A.L. We have in mind symposia, space in periodicals, but also the support of initiatives on an education policy level.
5. In conclusion we will solicit frequent and intensive contacts with those institutes and colleagues abroad, who are practising C.A.L. In view of the small size of the Dutch-speaking market for geographical software it is recommendable to come to close co-operation with education geographers from the Dutch-speaking part of Belgium.

---

12) To contact ASCON the author's address has to be used for the time being, viz. Nr. 10, Arie van de Heuvelstraat,
3981 CV Bunnik, the Netherlands
Tel.: 03405 - 64610.

Literature

Antrop, M.: "Microcomputers in het onderwijs: nieuwe mogelijkheden... ook voor de geografie". In: "De aardrijkskunde", 1982, 4.

Beckum, J.D.F. van,: "Aardrijkskunde en het computerondersteund onderwijs". In: "De Nieuwe Geografen Krant", April 1983.

Graves, N.J.: Abstract of paper: "The development of computer assisted learning in geography in England and Wales". Regional Conference IGU, Brasil 1982.

Shepherd, I.D.H., Cooper, Z.A., and Walker, D.R.F.: "Computer Assisted Learning in Geography. Current trends and future prospects." CET 1980.

Trimp, H.: "Kunstmatige aardrijkskunde". In: "Geo Informatie", 1982, 3.

Uhlenbeck, E.M., Bruijn, N.G. de, and Levelt, W.J.M.: "Computers in het onderwijs. Advies aan de Minister van Onderwijs en Wetenschappen." Staatsuitgeverij 's-Gravenhage 1982.

Appendix Survey of Dutch Geographical Software

All these ASCON-programs are interactive and designed for individual use on stand-alone microcomputers.
For further information see note Nr. 12.

Abbreviations: T = Tutorial/instructional
S = Simulation
MS = Middle School
US = Upper School

Name	Topic	Type of C.A.L.	Educ.Level
"Klimaten"	Köppen's Climatic classification exercises, test	T	MS/US
"Demografie"	Standard Demographic concepts, calculations, exercises	T	MS/US
"Verbanden"	Geographical Relations, correlations, etc.	T	MS/US
"Schaal"	Scale, calculations, exercises	T	MS/US
"Lokaties" (in development)	Choice of settlement location	S	MS
"Transport" (in development)	Transport systems, traffic and costs, principles, decisions	T/S	MS/US

ABOUT THE IDENTITY OF INFORMATIONAL GEOGRAPHY FOR FORMAL, NON-FORMAL AND INFORMAL EDUCAIONAL PURPOSES

National Council for Geographic Education
78th Year, Annual Meeting
October 23-28, 1983, Ocho Rios, Jamaïca, W.I.

Prof.Dr.Henriëtte Verduin-Muller

Paper: Session WS2:1, Geographic Education
October 26, 1983, 8.45 p.m.- 10.15 p.m.Room S-3

Geography for Education, October 1983
Geographical Institute, State University,
Utrecht, The Netherlands

ABOUT THE IDENTITY OF INFORMATIONAL GEOGRAPHY FOR FORMAL, NON-FORMAL AND INFORMAL EDUCATIONAL PURPOSES

With the rapid transformation of the industrial society into the information society, terms seem to get another or even a double meaning. And not to run the risk of misinterpretation, I first want to ask your attention for the definition of the crucial terms used in the title of this speech.

To begin, the most confusing one, namely information, will be determined. Information will be used in the following, generally accepted meaning. *Information* then, is defined as any input that is intended for the purpose of reducing uncertainty, or of confirming or enlarging prior knowledge.[1] In other words, information forms the raw material for the generating process to which all persons are in principle entitled. With the generating process is meant the processing of information as demonstrated in our thinking, decision making and actions.
So any input can get an informational function. It does not make any difference if the input is administered by high or low technology, thus by highly sophisticated computers, book-, tv.-output, or discussion.
This speech in its spoken form (out/input) (or in written form as a paper) may function, and I really hope it will, as information for the listeners' (readers') generating process, today, tomorrow, or the day after tomorrow, thus in the near future or in a more removed one. The generating process, namely usually takes an erratic development. Therefore it is a happy circumstance that information as raw material can be stored.
The most complex and private storehouse is our memory. Besides we have other private storing places such as notebooks, audio-cassette recorders and micro-computers. Apart from private storing places, there are public ones we can use, such as archives, public libraries, video-tape centers and data-banks.
A very remarkable aspect of information is that after using it in function of the generating process, this raw material can be kept in its original form, whereas mostly raw material is not recognizable after use. So, generating information is in principle a reversible process, which is of great importance.

The second term to bring up is *education*. Education is used here in the terminology of UNESCO and is roughly defined as introducing people to the knowledge and understanding necessary to hold one's own in society and to get along in society.[2]

Thus, education is of an emancipating nature and therefore has to have intellectual substance. Formal education is school-education as must be given by law, non-formal education includes all forms of adult education, in fact lifelong education or permanent education, and informal education comprehends the many ways in which people are informed and guided on different topics and events. So by education we do not mean the actual 'teaching' process as it is determined by all physical and social aspects of a communication situation. After this we will now turn to the title as a whole.

What is the quintessence of informational geography for formal, non-formal and informal educational purposes?

Our physical and human geographical settings are continuing and potential sources of information and with that deliver food for the generating process. And indeed from the very beginning man has reacted meaningful to the possibilities and limitations of his spatial situation. To survive, a place of optimal security was selected for building living-quarters, and fishing and hunting grounds were carefully chosen. We pose that distinguishing relevant geographical information, making adequate decisions and operating in accordance is basic the human being. We mean that by doing so, he has proved to react meaningful upon and in relation to his living space. For example, land used for several crops was abandoned and with that given back to nature to restore it in one or another way.

In Third World countries we can still observe this keenness and precise knowledge of the possibilities and limitations of space. Without having any agricultural research output at disposal, the autochthonous people know exactly how the soil can be put to the best use. And many a multinational has wished to have listened more carefully to the autochthons before a capital intensive project was started. We then think e.g. of the badly failed peanut project the U.K. set up in East Africa in the fifties, notwithstanding the amazement of the native people. The financial loss was an ample 60 million pounds.

The history of mankind is full of examples of reaction to spatial setting in a positive sense. Through the ages the peoples of the Sahel region had built up a very delicate, but functional balance in the occupation of the soil in that semi-arid region. A balance that has been fundamentaly disturbed, leading to today's Sahel problems, by the Europeans opening up West Africa from the coastline in their search for raw materials.

In trying to make the best use of space and in doing so avoiding blunders as mentioned, the science of geography could be of great help. More and more has society begun to appreciate geography as a science which can contribute to the understanding of all kinds of spatial phenomena and processes. Moreover, in the 'shrinking world' there will be limited space, limited materials and limited capital for men's basic needs as to living, working, communicating and recreating. So it is important to make a well considered use of the physical and human geographical setting. But how to filch from the geographical settings the information needed to attain adequate decision making and consequent behaviour. The answer is empirical research.

Indeed, the science of geography is in a phase of healthy development.

But research is only the beginning, the research output has to be translated into actions, that is into management, thus preventing that research reports disappear into the deep drawers of a desk or serve as ornaments on the shelves of archives.

So people on all levels are to be interested in and therefore informed about the research output. We think indeed, this should take place in all three types of education mentioned, formal, non-formal and informal education.

In supplying the information we have to distinguish between two main types of informational geography: a *scientific* and a *man/society* orientated one.

In the *scientific* orientation the output of geographical research is published for its own sake. This geographical information then, as to its content, is a *translation* of the research output, to make it accessible as such.

This scientific enlightenment, as a new way of informing, is now becoming more popular all over the world. We only need to refer to the extensive range of magazines, among which the *Scientific American* is one of the best.

The *man/society* orientated way of informing is quite different and much more difficult to realise. In this case, the research output is used as a *source* in function of clearifying certain themes, problems and processes and to come to reflections on future developments. The man/society orientated enlightenment of informing goes, so to say, much further than the scientific one. It nearly goes without saying that informing while using the research output as a source is a very special task. However, man/society orientated enlightenment is making progress. This might be the conclusion from a short survey wherein leading geography journals as the American *Journal of Geography*, the English one named *Geography* and the German *Geographische Rundschau* are compared for the period 1963-1983.

We have mentioned the two extremes, but in reality there will be much in between, this is especially the case for the man/society orientated way, as we will see.
In the coming information age with its focus on information, and the opportunity as well as the need for man to be better informed, much work will have to be done in the informational geographical sector. Therefore we now turn to the question: 'who has to do the job?'. In other words, who can and who will take the responsibility for geographical informing.

I take the point of view that scientific and man/society orientated enlightenment have to be done essential by academic educated geographers.

As fas as the *scientific orientated* way is concerned, I think that the academic geographer has to complete his studies with theory of and practice in the communication sciences. Now that communication sciences in the Western World have gained so much in the last decennia, time may have come in which this science can serve in function of certain academic disciplines, in this case geography (physical and human). In Utrecht we do have excellent experiences in combining academic geography and communication sciences. This is a good moment to acknowledge my gratitude to the colleagues of the Faculty of Communication and Journalism at the University of Florida, Gainesville. There exists an affiliation between the universities of Utrecht and of Florida, so that geography students from Utrecht can complete their studies in Gainesville, and they do so with succes in the communication sciences, taking at the same time media courses which are to their satisfaction.

As far as the *man/society* orientated way is concerned, things are much more complicated, because, as we saw, research output is used as a source. The consequence is that a theory and a method to design geographical information has to be developed.
The academic geography student who plans to work in the field of man/society orientated enlightenment has to complete his studies with this theory and method and must practise his abilities at the same time.

In May 1973 the Geography Faculty of the University of Utrecht decided to start a doctoral research study in Geography for Education, in which the provision with geographical information took a central place. By this, geography was taken to be an applied science. Included were the three levels of education, namely formal education, non-formal (adult) education, as well as the broad field of informal education, e.g. by citizens' participation in spatial planning procedures.

The decision to start this doctoral research study was taken in the light of the changes which society and especially Dutch society was likely to face in the years to come. Among these were demographic changes (the Netherlands having entered into the post-transitional phase of demographic development), which meant less pupils, and thus more potential clients for non-formal and informal education.

The extension of education will also be determined by such factors as more leisure time and the internal and external democratization of society on the one hand and the extension, improvement and demassfication of the communication media on the other. In consequence, education itself will change into making available highly qualitative module-like educational information units. The teacher will see him or herself in a different role: as a valuable study companion for the student.

The new study 'Geography for Education' had an appropriate birthplace, since so much empirical research in geography has been done and is to be done in the Geographical Institute of Utrecht.

A small staff set to work in the fall of 1973.

Literature study made clear that no theory nor method for designing geographical information did exist. Studying curriculum theory, instructional design, media design, the didactics of geography and the descriptions of the realization of geography projects such as the American High School Project was interesting, but did not carry us much further. (The big project in the U.K., in Western Germany and in my own country, the Netherlands, were in a phase of discussion and were executed only in the second half of the seventies.)

The literature we studied was orientated to instruction, that is why I think, special attention for the information to be given was neglected.

Most remarkable was a notation made bij Nicholas Helburn in his Final Report on the High School Geography Project, on page 34. I quote, 'Arthur and Judith Gettis worked nearly full time from November, 1964 to June, 1965, on the first urban unit. *They had no model to work from*'.[3]

Helburn's remark within the context of his chapter on '*The development Process*' of the HSGP gave ample food for thought. A designing model for geographical information had to be constructed.

The best way to proceed seemed to be on a pragmatic basis, to design geographical information, to watch the process carefully, to notice sharply what was happening, to protocol all activities, to discuss the procedure and to visualize the development in a diagram.

Fortunately we could begin with two commissions from the field: one on

European Population, a combined commission from the Council of Europe and the International Council for Educational Media (ICEM), and a second on *Landconsolidation in the River District* (the land between the big rivers the Rhine, the Waal and the Meuse), a commission from the department of Land Division of the Ministry of Agriculture. So we had a kind of frame of reference for the programme of requirements for the geographical information to plan. Before I will make you a partner in the design adventures, I have to focus on the objective of Geography for Education, because logically, the definition determines the essentials of the information output.

The objective of geography for education then, is that man will see himself in his relation to his immediate and distant environment, This relationship changes continuously. In order to be able to determine his social and existential position man must be able to orient himself in his environment and to acquire insight into the changes which take place in it.

On the one hand, man is part of an ordered environment; on the other hand, he causes changes in this environment by his own activities. Physical processes also cause changes independent of man. Thus a continuous reshaping occurs, either gradually or precipitately.

It is the task of geography for education to make man thoroughly familiar with the existing physical-spatial and social-spatial structures as well as the genesis of these structures and with the processes especially those concerning spatial behavior and behavior in space which influence them. As a consequence of the continuing spatial reordering man, during his lifetime, is constantly confronted with new relationships. The underlying aim is therefore that man will be able to and will dare to venture independently to acquire insight into spatial social relationships new to him.

The nature of the given definition is, as far as could be concluded from a study of objectives, rather universal, and fully in the man/society orientated context. So we set out to develop a model for designing geographical information in which research output from the discipline would be taken as a source, whereas the information output itself would serve the man/society orientation.

How to master the blackbox situation?

Posing questions and problems in a foot-loose way had to be avoided. In consequence it was necessary to study the field from a holistic point of view, thus the field had to be approached as a system. In order to map out the field to be explored an operational research was set up. The research cycle used in the social sciences and empirical by nature, in due order: observation

(hypothesis) ⟶ induction ⟶ deduction ⟶ testing ⟶ evaluation ⟷ observation

seemed to be a good entry into the blackbox, and indeed it turned out to be. (The hypothesis as to planning and designing geographic information were based on former research.)

The research was executed by the staff together with the doctoral students of Geography for Education as part of their study. To begin with there were the two commissioned projects from the field (on European Population and on Land-consolidation in the River District), soon followed by a purely staff runned project on geographical information concerning the *Green Heart Metropolis* (Randstad).

By October 1983, after an ample ten years, we have realized 50 projects all-together, spread over three generations.

Departing from the social science cycle, step by step a model was developed to design geographical information for man/society orientation on different educational levels, namely formal, non-formal and informal education.

We paid much attention to the diversity of the geographical themes and the regional settings. This themes and settings varied from the European population and land consolidation to the functional shift in Berlin caused by the partition of the city and the Green Revolution.

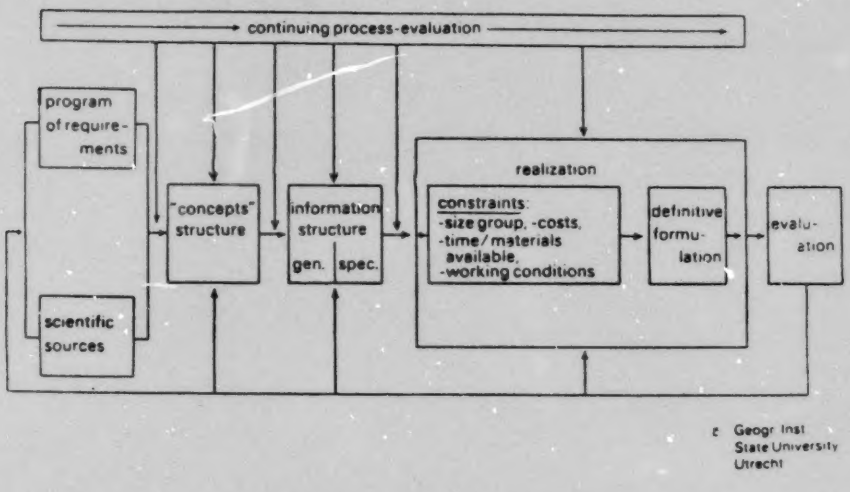
As to aspects of the content, a close cooperation was developed with the different specialists within the Geographical Institute.

In 1976 five theses on designing geographical information were published (Moscow, 23rd IGU-congress). These theses then led to a model which was presented on different occasions in 1978 (London, April 1978, IGU-symposion on Geographical Education; Ibadan, Nigeria, July 1978, Regional Conference IGU). This model is still of current interest, since it has proved to be very useful. However, far more insight has meanwhile been gained into the mutual coherence of the elements within the model, as well as into the connections and junctions with outer elements. Rightly so the model is valued as a system.

The model is given in figure 1.

A model for planning and designing information for man/society orientated geography.

fig. 1



As sources were used: in the first place research output, but also literature, observation on location, interviews, archives, statistics, screened media etc.

From the very beginning there was a continuous reflection on the research undertaken and written up in reports, theses, process descriptions, process evaluations etc.[4] So we acquired much fruitful information, not only concerning the actual model as a whole or per element, but at the same time also about crucial points in the decision making process involved when working with the model. Together with the very diverse remarks, marginal notes and queries from colleagues abroad, which gave us a lot of unexpected insight into the complexity of the field under exploration, much information was collected.
A publication about those experiences is coming forth. A first specimen was already presented in paper form at the 24th IGU-congress in Tokyo in 1980 (section Geographical Education in Tsubuka, Japan).
Of the two types of informational geography, the scientific and the man/society orientated one, we found the latter far more complicated than the former one. And especially in the coming information age there will be, as explained, great need for clear, objective geographical information in the man/society orientated enlightenment. Indeed, there is a good deal of work to be done by geographers.
In Utrecht we will continue refining the system, we hope to keep you informed.

Thank you for your attention.

NOTES

1. To B.Goss, Processing Communication, Belmont (Cal.), Wadsworth, 1982, p.23.

2. E.Faure, Learning to be, UNESCO, 1972.

3. N.Helburn, The Development Process. In: From Geographic Discipline to Inquiring Student, Final Report on the HSGP, 1970, p.34.

4. H.S.Verduin-Muller, Theses on designing and dissemination of geographical knowledge.Paper ten behoeve van het 23e Congres van de International Geographical Union, Moskou, juli/augustus,1976.

M. Sinke, Geografische inspraak-informatie in Vlaardingen. Verslag Randstadprojekt I. Geografisch Instituut, RUU, 1977, 48 blz.

H.S.Verduin-Muller,R.van der Vaart, H.Hoitink,G.Verschuren, A conceptual model for curriculum planning in geography. In: Geographical Education: Curriculum problems in certain European countries with special reference to the 16-19 age group, N.J.Graves (ed.), London, University of London Institute of Education, 1978, p.6-41.

P. van den Boorn, J. Franke, 200-jaar arbeidsmarkt in Utrecht, ontwikkeling en evaluatie van een onderwijsleerpakket. In: Werken in Utrecht - toen, nu en straks, M. de Smidt, H.S. Verduin-Muller, Nederlandsche Maatschappij voor Nijverheid en Handel, Departement Utrecht, januari 1978, blz. 103-143.

H.S.Verduin-Muller, R. van der Vaart, The geographical information educationist, the why, what and who of a new profession, Paper, ten behoeve van de regionale conferentie van de International Geographical Union, Ibadan, Nigeria, 1978, 18 blz.

H.S.Verduin-Muller, Geographers in the post-industrial age.Paper ten behoeve van het congres van de National Council for Geographic Education, Mexico, Mexico City, 1979, 11 blz.
Op microfiche uitgegeven door Eric Clearing House for Social Studies and Social Science Education, Boulder,Colorado,1980.

H.S.Verduin-Muller, R.van der Vaart, Experiences with a conceptual curriculum model for geography, from thesis to system.Paper ten behoeve van het 24e Congres van de International Geographical Union, Symposion of the Commission Geographical Education, Japan, Tsubuka, 1980, 24 blz.

H.S.Verduin-Muller, Konzeptionsmodell für die Curriculumplanung in der Geographie und Realisation geographischer Informationseinheiten.
In: Curriculumarbeit in Europäischen Staten, Der Erdkundeunterricht, Heft 37,R.Geipel und H.Schtrettenbrunner/,Stuttgart, Klett,1981,S.37-58.
(Hrg.)

H.Hoitink, Ruimtelijke wetenschappen en voorlichting. In: Stedebouw en Volkshuisvesting, 62e jrg.,1981, blz.111-117.

H.S.Verduin-Muller, Das Partizipations-Projekt Randstad-2, entwickelt am Utrechter Curriculum-Modell. In:Bremer Beiträge zur Geographie und Raumplanung,G.Feller und W.Taubman (Hrg.), Bremen, Universität Bremen, 1982, S. 296-311.

R. van der Vaart, Scholingsconcepten. Brochure Reeks I, Enschede, Stichting Leerplanontwikkeling, 1982, 99 blz.

H.S.Verduin-Muller, Geografie en informatievoorziening, COCMA-voordracht nr. 25, Amsterdam, Meulenhoff Educatief, 1982, 31 blz.

RESEARCH AND RESEARCH METHODS

IN

GEOGRAPHICAL EDUCATION

edited by

Norman J. Graves

Work undertaken by the

Commission on Geographical Education

INTERNATIONAL GEOGRAPHICAL UNION

1980 - 1984

AND

PRESENTED TO THE XXV IGU CONGRESS 1984

© copyright
IGU
Commission on Geographical Education

ISBN: 0 85473 187 3

This collection of papers was funded
by the International Geographical Union

1984

CONTENTS

		Page
Introduction	Norman Graves	1
Research Methods in the History of Geographical Education	William Marsden	1
Research Methods in Investigating Childrens' and Adolescents' Perceptions of their Environment	Brian Spicer	29
The Perception of Hazards in Geographical Education: Research Methods	Giorgio Valussi	82
Methods of Researching the Use of Visual Aids in the Teaching of Geography	Agustin Hernando	98
Research Methods in Evaluating the Use of Media in the Teaching of Geography	Hartwig Haubrich	119
Broadening Geographical Education	Henriette Verduin-Muller	143
Three Brazilian Cognitive Studies on Geographical Education	Livia Oliveira	165
Research in Computer Assisted Learning	Ashley Kent	179
Research into the Problems of Methods of Geography Teaching in the U.S.S.R.	Lydia Panchesnikova	192
Action-Research Methods in Geographical Education: the Experience of France	Lucille Marbeau	204
Research Methods in Geographical Education in Japan	Ryutaro Asakura	215

CONTRIBUTORS

(In the order in which they appear on the Contents page)

NORMAN GRAVES	is Professor of Geography Education at the University of London Institute of Education, U.K.
WILLIAM MARSDEN	is Reader in Education at University of Liverpool, U.K.
BRIAN SPICER	is Senior Lecturer in Education at Monash University, Australia.
GIORGIO VALUSSI	is Professor of Geography at the University of Udine, Italy.
AGUSTIN HERNANDO	is Lecturer in Geography at the University of Barcelona, Spain.
HARTWIG HAUBRICH	is Professor of Geography at the University of Freiburg, Federal German Republic.
HENRIETTE VERDUIN-MULLER	is Professor of Geography Education at the University of Utrecht, Netherlands.
LIVIA OLIVEIRA	is Associate Professor of Geography at the State University of Sao Paulo 'Julio de Mesquita Filho', Brazil.
ASHLEY KENT	is Lecturer in Geography Education at the University of London Institute of Education, U.K.
LYDIA PANCHESNIKOVA	is Professor of Geography Teaching Methods at the Moscow State Pedagogical Institute, USSR.
LUCILLE MARBEAU	is Inspector in Charge of Pedagogical Research Programmes in History and Geography at the Ministry of National Education, France
RYUTARO ASAKURA	is Professor of Geography Education at the University of Tsukuba, Japan.

10-1

BROADENING GEOGRAPHIC EDUCATION

(On informing people about geographical knowledge)

Henriette Verduin-Muller

Introduction

Nineteen eighty four, the year of publication of this essay, can be seen as a landmark in information technology. Satellite broadcasting has become a reality within Europe and many channels will spread information all over the old world. It thus seems to be an appropriate moment to reflect on information's function in education: not just in formal education, but also in the fast expanding non-formal and informal education sectors.

Moreover we stand at the threshold of, or are already embroiled in, the break-up of the familiar industrial society, we are moving towards a post-industrial society, since mass-production is increasingly controlled by micro-chip technology, and an information society, since information as a product or raw material permeates all its aspects. Human beings are confronted with a brand new situation: with less work, more time for personal development and more opportunities to communicate. Geography is a subject of immense significance for human beings since it tends to give insight into the manifold of physical social and human phenomena and their interaction in this complicated world, and a new field for educational geography is opening up.

In this essay written as a contribution of the Commission on Geographical Education on the occasion of the 25th IGU congress in Paris, attention will be paid to the special problems of widening the horizons of geographical education. It will focus on one of the main problems, namely the development of educational geographical information as well as the results of research in this field.

On information, its definition, characteristics and function

For a definition of information we look to those given in the rich literature on information theory. Information then is to be defined as any input that a person attends to for the purpose of reducing uncertainty, confirming or increasing previous knowledge (Goss 1982). As a consequence information can be seen as the raw material for thinking, deciding and acting in every day life.

Information has a great variety of forms and content. Information may have the form of a spoken or written text or a visual image, such as a still or moving picture, a graph, a diagram, a map or a sketch. There exist also a mixed form, the tape-slide sequence is a clear example. The content of information can be extremely varied: factual data, statistics, events, concepts, feelings.

The reader might be aware that the term 'media' is not used here. In the context of this essay I prefer to leave out the channels used for the diffusion of information, because so often information as such is overshadowed by the medium. This is because of the emphasis placed on the spectacular features of the medium in question. Consequently the content of the information does not get the attention it deserves, namely to reduce uncertainty, to confirm or to increase previous knowledge.

Raw material has the potentiality to be utilized for processing, either to a half or to a final finished product. Only if input is 'seen' as a raw material does, transformation take place. The awareness of 'seeing' the raw material is the resultant of an interplay of available knowledge,

10-2 BEST COPY AVAILABLE

technological know how and/or societal benefit. Information is real raw material. Input per se, does not contribute to a deepening and refinement of thinking, deciding and acting.

Only if input is identified as information, is apparaised properly, will it become information. It will be clear therefore, why in one case input is picked up as information processed,and utilized, where as in another case nothing may occur.

In order to understand the concept information, it was compared with the familiar concept raw material. There exist as we have seen, much similarity, there is however, also an important difference.

As a rule raw material after processing, becomes unrecognizable. In the case of information this is different. After serving to develop one's thinking, deciding and acting information remains unchanged. In other words after processing the basis material is preserved in the original form.

This has important scientific, political and societal implications. It is possible to check and evaluate information as the raw material for thinking, deciding and acting.

Further, as new information becomes available, so new phases of thinking, deciding and acting develop. The generating process usually proceeds slowly and erratically, for man is dependent of his abilities and those are bounded. Moreover, other persons or institutions are often involved in decision and acting procedures. The process of maturation which underlies the generation of new information may take years, dependent on such factors as the specific qualities of the woman or man interacting with the input.

To select input as information has principally to do with creative and innovative thinking of a vertical as well as of a lateral nature. Fortunately, research on creativity and innovation is now plentiful and published in readable and manageable forms.

Thus a reliable store of information gathered in all phases of the generating process is of great importance. In the first instance man may use his memory as a store. In recent years the means of storing information have developed dramatically: tape recording, video tape, calculators, computers and so on. Next, apart from the storage of private information, information may be stored for public use. Authors, programmers, journalists, public relations officers, documentalists and scientists see it as their task to gather, to process and to publish information. By this means a variety of information storage centers came into being such as archives, libraries, statistical bureaus, info-centres, video-centres, audio-centres, information and documentation centres and electronic data banks.

However, mechanical and electronic apparatus have more processing capacity as well as storage capacity. When during the nineteenth century socio-economic information became more and more complex, mechanization of procedures was initiated. An early example of this in the USA, was when Hollerith developed a 'mechanical assistant' for collecting and processing the 1890 census data. The influx of immigrants together with the high birth rate in the USA almost demanded such a technical innovation. Census mechanization formed a basic contribution to the present computer technology. Until very recently, unfortunately, most attention was concentrated on software technology, that is programming the computer. Gradually this attitude is changing and more attention paid to information in its fundamental aspects. Let us return to our theme and round off this section about information.

Owing to the capacity and variety of information stored, the data is made accessible to other people, who in their turn, can use it to develop their information generation process.

Owing to the world-wide range of the modern communication channels such as the satellite links, the dissemination and diffusion of information has important effects. For example, T.V. satellite connections brought the Vietnam war daily into the homes of the American people. Never had the Americans been so directly engaged in acts of war. As a result judgements as to the merits of events in Vietnam were influenced to a high degree: an initial neutralism turned to denunciation. As a consequence the course of the war was influenced, and the war eventually abandoned.

It will be clear that man can make use of information from a world-wide network to develop his own generation of further information. However, only honest and transparent input has the potentiality to function as information, thus by a generative effect 'to reduce uncertainty, confirming or increasing prior knowledge'. Or to pose it in the spirit of Patrick Meredith 'input has to put in-formation to function' (Meredith 1988).

After being engaged with main aspects of information we turn in the next section to information in the context of geographical education.

Geographical information for education

To begin with we want to give a definition of geography for education. This may sound strange but experience shows that the definition may vary from country to country. Probably this has to do mainly with the origin of geography for education. Until recently geography for education was directly related to academic geography. Yet research has shown that

educational geographic information at all levels was made available especially since the early seventeenth century (Verduin-Muller 1982). That is, it predates formal academic geography.

Society has changed extensively and deeply since the mid-sixties and consequent upon this the function and content of geography for education is also changing. One can compare European geography school text books of the Fifties and Sixties with those of the late seventies to see the extent of this change. Even more striking is a comparison as to content and form of the leading periodicals of geography for education in the Western European countries.

My impression is, however, that at least in Western Europe, the differences between the definitions of geography for education decrease.

The definition of geography for education (outlined later) was formulated by the staff of 'Geography for Education' at the Geographical Institute of Utrecht University in the course of the Seventies, and presented at the 23rd IGU conference in Moskow 1976 (Verduin-Muller 1978). The definition also has become the line of action of the nation wide empirical research group 'Geography for Education'. This group was, by December 1982, still active. It will function as a sub-group of the much larger research group 'Spatial Analysis'. Its organizational features are important as they affect the cooperative aspects of research projects. Before I give the rather long definition of geography for education I have to mention that education involves formal (regular) and non-formal (adult) education, as well as the broad field of informal education, as illustrated by citizen participation in spatial planning procedures.

BEST COPY AVAILABLE

The objective of geography for education then is to enable people to see themselves in relation to their immediate and distant environment. This relationship changes continuously. In order to be able to determine his social and existential position, man must be able to orient himself in his environment and to acquire insight into the changes which take place within it. On the one hand, man is part of an ordered environment; on the other hand, he causes changes in this environment by his own activities. Physical processes also cause changes independent of man. Thus a continuous reshaping occurs, either gradually or precipitately.

It is the task of geography for education to make man thoroughly familiar with the existing physical-spatial and social-spatial structures, with the genesis of these structures and with the processes, especially those concerning spatial behaviour, which influence these structures. As a consequence of the continuing spatial reordering man is constantly confronted during his lifetime with new relationships. The underlying aim is, therefore, to enable man to venture independently and acquire insight into new spatial social relationships.

The most striking feature of the given definition is that not only does it give an intellectual explanation of geographical phenomena but it is concerned with their consequences. Man needs to be aware that he has to live in a symbiosis with the potentialities of his environment (in the widest sense of the term). So the geographical content is seen as source material for thinking activities and not an end in itself. This is especially important since man recently began to doubt whether he had a future. He is however, becoming aware that there exist certain boundaries to his exploitation of nature. As we will see and illustrate in the next section working in accordance with these ideas is rather difficult. It is far less complicated to explain and comment on phenomena than to stimulate independent thinking.

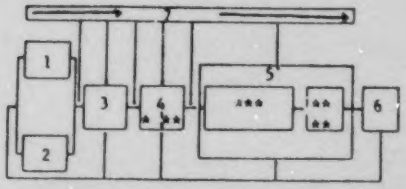
We now face the task of developing, designing and realizing a type of educational geographical output enabling the receiver to react to the meaning of the information. This is a difficult task if we accept what is said in the preceding section about the functioning of input as information. However, it is crucial if geography is to contribute to existential enlightenment in a post industrial society.

In order to try to find an answer to the design problem an extensive literature search was made. General literature was examined such as that concerning curriculum development, educational technology, and media, and special literature on geographical education and the geography curriculum. The findings are described and published (Verduin-Muller 1978a, 1978b, 1978c, 1981).

It seemed however, that the designing process had not been addressed; it did not receive attention in the literature consulted. In the course of the years I discovered that the design process as such is underestimated, not only with respect to educational information, but also to products for industry and even entertainment. In the mid-seventies a BBC executive replied, when asked about designing activities, that designing and realizing an information programme is difficult and time consuming, especially if it is to be clear and honest. He further stated that the average listener or viewer had not the slightest idea of the underlying programming processes and that properly speaking the programme maker should add some totally incomprehensible material, in order to get any programme appreciated. This remark gave food for thought and since in the literature consulted I did not come across a method for designing and realizing education geographical information a model for this process was formulated on an empirical basis. This model is also described and published (Verduin-Muller, 1978a, 1978b, 1978c, 1981).

BEST COPY AVAILABLE

A copy of the model is given as a summary. The elements are numbered and named. For further information the reader is referred to the publications describing the full model and available in Dutch, English, German and Bahasa Indonesia.



©Geogr.Inst.
State University,Utrecht

Legend

1. Need/Demand, Objectives, Target group, general
2. Scientific sources.
3. Conceptual Structure.
4. Information Structure.
   * Global
   ** Specific
5. Realization
   *** Constraints
   ****Definitive formulation.
6. Evaluation.
7. Continuing Process Evaluation.

Experiences with the model

Having developed and disseminated the model as an instrument for designing educational geographical information, we collected from the very beginning reactions on a national and international level.

The finished conceptual curriculum model, carefully written up and illustrated by fragments from the project-work, was presented at the IGU-symposium held in April 1978 in the Department of Geography of the Institute of Education of the University of London (Verduin-Muller 1978d), at the symposium of the Regional IGU-conference in Ibadan (Nigeria) in July 1978 (Verduin-Muller 1978a), at the annual meeting of the American NCGE (National Council for Geographic Education) in Mexico City, October/November 1979 (Verduin-Muller 1979) and in connection to the staff-project Participation Project Randstad at the German Educational Geographer's Conference in Bremen (FRG), May 1980 (Verduin-Muller 1982).

Besides the discussion at the symposia, the model was discussed and put into operation by colleagues in different universities all over the world. A version in the Indonesian language, appeared in 1978 for use with students of IKIP-Bandung (an Institute for Higher Education). Moreover the model continued in use within the Project-work for the doctoral students in the Geography for Education section at Utrecht University. Quite a number of projects were realized along the line laid out in the model. Those projects carried out by staff members, individually and as a group, and by doctoral students in small groups were of different type, covering the formal, non-formal and informal fields in Geography for Education. By December 1982 fifty projects had been undertaken or were nearing completion.

There was from the very beginning continuous reflection on the research undertaken and written up in reports, these, process descriptions, process evaluations, and so on I acquired much fruitful information, not only concerning the actual model as a whole and its elements, but also about the decision making process involved in using the model. Further the very diverse remarks, marginal notes and queries from colleagues in our own country and abroad, gave me a lot of unexpected insight into the complexity of the field under exploration, I had so much information available that I felt able to bring it together in this essay.

A first overview of the experiences with the model was given at the symposium of the IGU-commission on Geographical Education during the 24th IGU-congress, Tokyo, July 1980 (Verduin-Muller 1980). The experiences and reactions, can be classified into five categories. We will mention them

BEST COPY AVAILABLE

in turn and comment upon them.

The first group of reactions is a very understandable one, related to the confusion of Geography for Education with actual geography teaching. From an historical and practical point of view, interest in geographical education usually involved formal teaching. So far as geographical institutes or educational institutes of universities were concerned they always thought in terms of providing courses for future geography teachers.

The difference between designing educational geographical information and preparation of a geography lesson is given in the table below.

Designing educational geographical information	Designing educational geographical instruction
framework: societal need/ desirability target group in general ↓ content+expression (verbal, visual, audio-visual etc), ↓ product (with information strategies) intentional/incidental evaluation (test groups)	framework: curriculum pattern and working conditions (entry behaviour of students, time table etc). ↓ content+media-selection ↓ lesson-program intentional evaluation teacher: assignments student: comment/remarks (teacher may make use of educational geographical information in designing his instructional programme)

It was interesting to see that the confusion was characteristic of the situation of many colleaguesin the Western World, whereas our discussion partners in Third World Countries (Indonesia, Nigeria, India, Venezuela,

BEST COPY AVAILABLE

Mexico) did not reveal that confusion. The reason might be that in the Western World geography for education is identified with teaching practices, whereas in the Third World Countries with their shortages of books and other educational materials and lack of educational resources (teachers, schools) on the one hand, and the extension of communication channels at the other hand, geographical educators seemed in the first place to think of the problems of the availability of educational information in any form. We stress that the categories of discussion partners in both 'macro-regions' were the same: namely geography teachers, trainers of geography teachers and academic geographers.

A second kind of feed-back we noticed concerned the use of the model as such. Working with a model mostly constrains the individual, engaging him in various internal conflicts. Two factors are involved:

. personal styles of thinking (people have own ideas) and

. the methodological procedure itself, as formulated in the model.

Thinking is a human not a mechanistic or computerized process. Human thinking bears all the characteristics of creative activity. It is beyond the scope of this essay to reflect on thinking processes and their diversification. We only posit here that within thinking activities the people involved have early points of reference which determine the output of their thinking. Seen in the framework of methodological scientific work the crucial moment then is to take hold of one's own thinking, to get it under control, to plan and to order ideas, and creatively to structure these ideas within the systematic framework of the model.

From our experiences with the model we learned that after studying the model people took a piece of paper and merely wrote down inforamtion for geography in education in a schematic way as an output of their idiosyncratic

thinking or, even without taking this intermediate stage, immediately outlined rough sentences, graphs, sketches, and footnotes to pictures. In both 'output' situations the educational geographer has stepped into the model halfway or even at the end, satisfied with his own spontaneous thinking and available knowledge.

But educational geographers usually wish to be more thorough than this, so they return to the model and begin to look more closely at its structure. The result is, however a time and energy-consuming wandering through the model, a rather unsystematic and even discouraging way of proceeding. The discouragement is mainly caused by the fact that the educational geographer concerned, has ignored the early stages of the model which include the crucial concepts structure. Thus it is assumed that the person involved has insight into the needs for the topic and the requirements of the product as well as full knowledge of the scientific sources concerning the topic. This is of course mostly not the case.

But the process is even more complicated. To get full benefit from the model it is necessary to go over each element in the same way as for the model as a whole. So each element and element within the element has to be handled in the authentic fashion of the model. This has to be done to a point beyond which element-analysis contributes no more to the refinement of the educational information design. The output of the separate actions can be given in a single sentence or as headings and when not relevant can be omitted. To work in this way seems time-consuming but in the end it is time-saving because the process is fully under control. At the same time the output in an education-geographical sense is optimised because in a logical, step by step, and a scientific, relevant way, the

product is developed.

In the above mentioned way the model gives the educational geographer a maximum of support and freedom at the same time. It is, however, of fundamental importance that the designing of educational information should be the work of a team following the methodological steps outlined. But in doing so the creativity, originality and flexibility must be retained, even stimulated and integrated into the designing process.

The third group of experiences to be dealt with here is mainly from the research with my own students in Utrecht. It is that kind of feed-back resulting from systematic work with the model over a considerable period of time. Apart from the fact that we have to do with a dynamic process when designing geographical information and thus have constantly to solve new problems, we can distinguish within the model between typical barrier and non-barrier elements. First the barriers, there are two.

We perceived that the model fell smoothly in two sections: the one being the needs, the target-group in general, the scientific sources and the conceptul structure; and the other the information structure and the realizationphase. The connection, between the conceptual structure and the information structure seems to be a difficult one. Students had great problems in focusing on the essential meaning of the conceptual structure when working at the global and refined information structure. It happened that something quite different emerged. The gap between the two elements appeared to be too wide.

Stepping stones from the conceptual structure to the global information structure are found first by clustering the concepts used in the conceptual

BEST COPY AVAILABLE

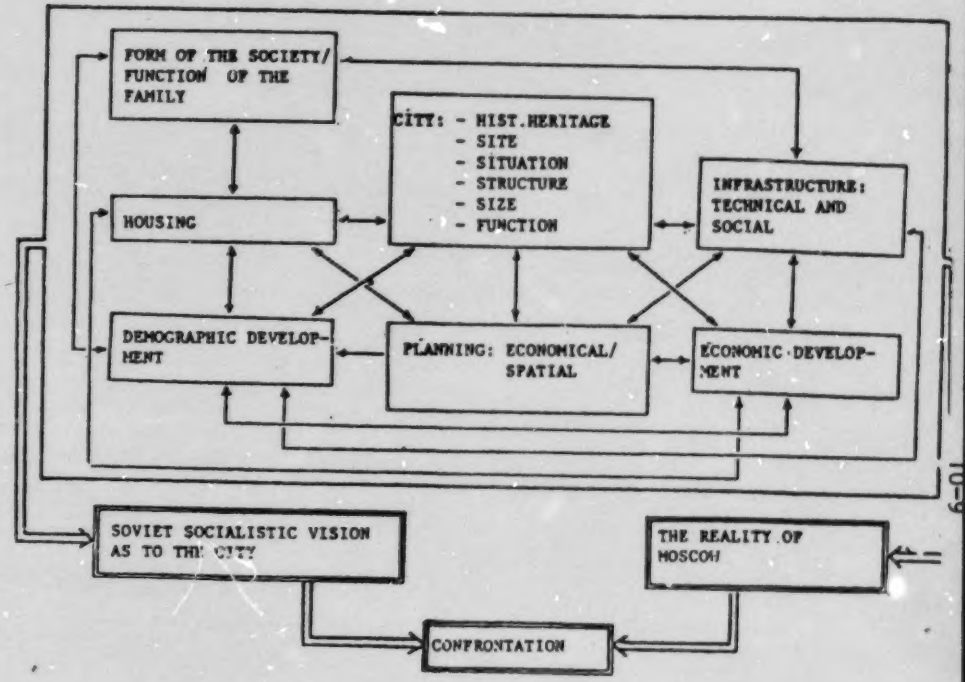
structure and second by a precise formulation of a program of requirements for the final product. Such a program of requirements has been roughly mapped out preceding the entrance into the designing process, roughly because honest and clear information does need openness especially at the beginning.

A good example of a conceptual structure with, in this case, built-in clusterings of the concepts used is offered with the designing process of the Moscow-project (figure 2). As a frame of reference we inform the reader that in respect of the given definition of geography for education as a general objective, the specific objective of the Moscow-project was stated as follows: 'for the student to gain insight into the Soviet socialistic vision at the city in a planned economy, with special interest for Moscow (USSR)'. The need for information on Moscow is based on the fact that the Soviet Union is part of the geography curriculum in secondary education. Moreover, up to and including 1983 the USSR is a final topic for the written final examination. The output of the project, indeed is much in demand by geography teachers.

BEST COPY AVAILABLE

Figure 2

The diagram of the conceptual structure of the project 'Moscow, a socialistic city?' (GE-16, executed between March 1979-January 1980; four students)



As might be clear from the diagram the three groups of concept-cluster are:

- the Soviet socialistic vision as to the city
- the reality of Moscow
- the confrontation

For the Moscow-project the clusters have paved the way for the global information structure. This refining of the instrument has been used ever since.

A second barrier was perceived within the realization phase. There we noticed the problem of optimal visualization. All types of visuals (included maps) tend to be used as illustrations that is as 'extra' and not complentary to the text. By complementary I mean that the 'verbal+ visual' form together one means of expression. I think that this deficiency on the one hand is caused by a lack of fundamental knowledge as to the potentialities of forms of expression, and on the other hand with the fact that visual material is so wide spread. As a result, seldom can a student get an overview of the available visual material, some of which might inspire the student and stimulate ideas. Within the Berlin-project (GE-25) we found a striking example of the positive function of a library of visuals. The special position of West-Berlin has led to the setting up of a specially equipped library for visual documentation, very rich and diverse. When the five students of the project group were over in Berlin for primary resource study, the visual library was seen as extremely valuable. When the Berlin project entered the realization phase, it turned out that the discussion about the presentation of the content was very creative probably because of knowledge about the potential of the visual documentation library. One of the reasons for the popularity of the output of the Berlin project for the preparation of excursions and their implementation, may be, apart from the content itself, the harmony between the presentation and the content. It is hoped that electronic data-storage will make available overviews of visual (and audio-visual) geographical source materials, regionally and thematically classified. Particularly time-consuming, were the source-study and the refined information study. Both do require lots of patience and perseverance and are at an operational level more or less at opposite poles to one another. With respect to the source study it is of special interest to note that when there is a need

for educational geographical information about phenomena where no scientific sources exist, academic geographical research for the topic may be stimulated by the educational geographer.

The fourth category of experiences with the model concerns content analysis. During the fifties when communication sciences were developing content analysis got much attention. By studying content, researchers hoped to understand the communication process. When it was realized that the content was only an element in the process, content analysis lost its significance. In the content of specific types of communciation such as personal communication or violence on television content analysis now is regaining attention.

Content analysis nowadays is also serving other purposes. With the increase of the serious reviews of textbook and other study material, educationists are implicitly engaged in content analysis. Since our concern is with geography materials, the following remarks are restricted to those type of materials. In counting pages, illustrations, assignments, noticing factual mistakes, the model proved to be of great help. When used in reverse the instrument so useful for designing educational geographical information, opened up important internal aspects of the academic content of textbooks and study-materials.

The idea was born out of practice. People, including our own students asked to see the material output of the design process, that is the final product. In presenting the output and especially in discussing the difficulties and barriers in the designing process it was thought worth-while for the students, to analyse the output of former projects. Such content analysis thenwas undertaken using the model and questions relating

to the geographical content and its informational strategies. The students enjoyed this excercise. The next step and logical consequence was to use the model to make a content analysis of textbooks and other study materials. The specific value can be clearly formulated. It seemed significant for determining the educational geographical value if the reviewer can dig out from the books or study material under consideration the conceptual structure of the content as a whole and the chapters or sections separately.

The fifth and last category of experiences has nothing to do with the model in itself, but everything with the consequences of working with this educational geographical instrument. It was observed that quite a few students took up novel forms of employment involving the processing and producing of geographical information for education. They operate at a management as well as an executive level. They are engaged in work concerned with physical planning information, the spatial-planning of schools, the processing and dissemination of information about planning, the diplomatic service outside the Netherlands, the development of Third-World education, Third-World information projects, secretariat positions in Commissions on the tourist development, editorial work concerning, educational geographical information materials such as textbooks and other study materials (including television and educational and documentary films) for formal, non-formal and informal education, full-time authors of schoolbooks for geography and geographical documentary materials, and further free-lance information officers for geogrpahy.

When asked what Geography for Education contributed to their dailywork, the average student answered that, besides a thorough academic study of geography, operating the model on a project-base (with personal reflection in a thesis) meant a continuing confrontation with processing and production

problems as to geographical knowledge. Also stressed was problem-solving in the context of a team (four to five students at maximum). Educational geography information processing can therefore be classified as a form of applied geography. Early 1982 this was inserted in the Academic Statute in the Netherlands.

Summary and final remark

In the first section of this essay attention is paid to information in its function of raw material for the mental generating process of human beings. I stressed that only output of a qualitively high standard can fulfill its potential as information. In a society with an emancipatory character as will be the situation in post-industrial economies, man has time and opportunity to work on his own generating process and with this give his existence a more flexible basis. As a contribution to this process of thinking, deciding and acting educational geography plans an important role when providing relevant information. In the second section, geography for education was defined and education seen in its broad significance (formal, non-formal, and informal). The question arose of how to design and realize educational geographical information which meets the requirements of honesty and clarity. For this reason a model for processing educational geographical information was formulated in the late seventies in the Geography for Education section of the Geographical Institute, University of Utrecht and published in Dutch, English, German and Bahasa Indonesia. A copy of the model is given in the essay.

Experiences with this instrument for designing educational geographical information are grouped in five categories and discussed in the third section of this essay. A main conclusion is that in being concerned with educational geographical information processing procedures new future

developments in this field are being initiated.

New developments do create new jobs. And new jobs will be required in designing and realizing geographical information for education purposes at local, regional, national and international level. On the other hand we have to be aware that producing educational information in practice will nearly always be a matter of team-work. Participating in the team are also non-geographers, such as media specialists. It has to be stressed that the final responsibility for the educational geographical information process under consideration and the product as its output is with the team. In case of disagreement it must be the educational geographer who takes the decision. However, he can only be credible when the methodological instrument to process and produce educational geographical information is thoroughly evaluated as well as the academic content of geography.

NOTES

B. Goss, Processing Communication, Belmont, Cal, Wadsworth, 1982, p.23.

P. Meredith, Information Systems and Systematic Information, in Journal of Education, 1968, p.79

Henriette Verduin-Muller, Geografie en Informatievoorziening, Utrecht: Voordracht opening COCMA, 1982, p.32.

Een conceptueel model voor het proces van het informatie-geografisch handelen Utrecht: Geografisch Instituut, RU, 1978, p.82.

Theses on designing and dissemination of geographical knowledge,23rd IGU congress, Moscow, 1976. Geographical Institute, State University, Utrecht.

A conceptual model for curriculum planning in Geography (Design and realization of geographical information units), in Norman J. Graves, (ed) Geographical Education: Curriculum Problems in Certain European Countries with Special Reference to the 16-19 Age Group, IGU Commission on Geographical Education, London: University of London Institute of Education, 1978, p.6-40.

Konzeptionsmodell fur die Curriculumplanung in der Geographie (Entwicklung und Realisation geographischer Informations einheiten), in Robert Geipel und Helmut Schrettenbrunner (ed), Geog-Curriculumarbeit in Europaischen Staaten, Der Erdkundeunterricht, H.37, Stuttgart: Klett, 1981, p.37-p.58.

Model Konseptual Untuk Memproses Informasi Geografis Untuk Pendidikan, Utrecht: Geografisch Instituut RU / Bandung (Indonesia): Jurusan Pendidikan Geografi F.K.I.S. - I.K.I.P. 1978/66.

A conceptual Model for Processing Geographical Information for Education, Utrecht: Geographical Institute, RU, 1978d, 63p.

Henriette Verduin-Muller, Rob van der Vaart, The Geographical Information Educationist, the why, what and who of a new profession, IGU regional conference, Nigeria 1978; paper Commission 3, On geographical Education, Utrecht; Geographical Institute, RU, 1978a, 18.p.

Henriette Verduin Muller, Geographers in the post-industrial age, paper National Council for Geographic Education, Mexico City, 1979, Utrecht: Geographical Institute, RU, 1979, 11.p.

Experiences with a conceptual curriculum model for geography, from thesis to system, 24th IGU congress, Japan, 1980; paper Commission 3 On Geographical Education, Utrecht: Geogrpahical Institute, RU, 1980, 42p

Das Partizipations-Projekt Randstad-2, entwickelt am Utrechter Curriculum-Modell, 17 Deutscher Schulgeographentag, Bremen 1980. In Gerhard Bahrenberg c.s. (ed) Bremer Beitrage zur Geographie und Raumplanung, Heft 2, Bremen: Universitat Bremen, 1982 p.296-p.311

INFORMATION THEORY AND GEOGRAPHY EDUCATION

International Geographical Union
25th. Congress, Paris, France

Commission on Geographical Education
Paper: Symposium, August 20 - 25th. 1984
Freiburg i. Br., Federal Republic.

Henriëtte Verduin-Muller
Geography for Education,
University of Utrecht,
Utrecht, The Netherlands

INFORMATION THEORY AND GEOGRAPHY EDUCATION

Henriëtte Verduin-Muller
Geography for Education - Geographical Institute
University of Utrecht, Heidelberglaan 2
3584 CS Utrecht, The Netherlands.

SUMMARY

In this paper information is taken in its most modern sense, i.e. as output inducing more refined thinking and decision making. Geography education is seen in its emancipatory sense, both for (changing) school education and for continuing education. It is posed that a theory is necessary in order to develop reliable geography information. Stepping-stones for such an information theory for geography education are given, discussed and illuminated. No references are made to methodological aspects.

An outlook on new types of jobs opening up for educational information geographers will end this paper.

INTRODUCTORY REMARK

This contribution may be considered a courtesy to the information society, where information taken in its broad sense will play an important role. Information has been in use since early mankind, how should man exist and survive without information. Through history the active work of geographers has, to a great extent, been very important for the provision with information (1).

However, it has been the electronic revolution which has made us fully aware of the term 'information'. Consequently the term was scientifically well defined. Gradually computer scientists seem to get used to the fact that their idea of information finds application in other sciences as well.

This paper will introduce the reader to the relations between information theory and educational geography. The content consists of the following sections:

- Summary
- Introductory Remark
- Information Theory
- Geography Education
- Information for Geography Education
- Information Theory and Geography Education
- Illuminating the Theory
- New Job Perspectives for Educational Information Geographers.

INFORMATION THEORY

To prevent any misunderstanding, the reader is explicitly informed that in this paper information is not necessarily connected with automatization, nor is the term information used in the sense of pure facts or data.

Information is defined as *'any input that is intended for the purpose of reducing uncertainty, or of confirming or enlarging prior knowledge'* (2). In other words, information forms the raw material for the generating process to which all people are in principle entitled. The generating process is the processing of information as demonstrated in our thinking, decision making and actions.

Any input can get an informational function as long as our interest has been aroused. This input can consist of facts, ideas, statistics, texts, feelings, discussions, and so forth. Is does not make any difference how the input is administered, whether by high or low technology, thus by highly sophisticated computers, books, t.v. or discussion.
Not all input can be used or fully used right away. The generating process, namely, usually takes an erratic development. Therefore it is a happy circumstance that information as raw material can be stored. The most complex and private storehouse is our memory. Besides we have other private storing places such as notebooks, audio-cassette recorders and micro-computers. Apart from private storing places, there are public ones we can use, such as archives, public libraries, video-tape centers and data-banks. These are the artificial memories. A very special artificial memory is the computer, which can generate input very quickly. However, the automatized 'thinking' process must be programmed very precisely.
A very remarkable aspect of information is that after using it for the generating process, this raw material can be kept in its original form, whereas raw material is usually not recognizable after use. So, generating information is in principle a reversible process.

Theory is primarily appraoched from a practical point of niew, considering its potentiality for application and not the pure, value free academic aspects. In accordance with the given definition of information, we pose that *information theory* is concerned with aspects of information provision. We then think of the underlying conditions to achieve general information requirements and requirements concerning geography education in particular.
In order to get the relationship between information theory and geography education in a better perspective, the scope of geography education will be determined first, then various aspects of information theory will be discussed.

GEOGRAPHY EDUCATION

First, education will be defined, then attention will be paid to the role of geography in education as defined beforehand.

The term *education* will be used in accordance with the terminology of UNESCO; there it is roughly defined as introducing people to the knowledge and understanding necessary to hold one's own in society and to get along in society.(3) Thus, education is of an emancipating nature and therefore has to have intellectual substance.
Formal education is school-education as must be given by law, *non-formal education* includes all forms of adult education, in fact lifelong education or permanent education, and *informal education* comprehends the many ways in which people are informed and guided on different topics and events. So by education is *not meant the actual 'teaching' process* as it is determined by all physical and social aspects of a communication situation.

What then is the quintessence of geography for formal, non-formal and informal education in the light of the formulated educational purpose. Although this has already been stated, the first time at the IGU-conference, section Geography Education, in Moscow in 1976, this statement has not lost any of its significance, indeed, societal changes made the given quintessence even more relevant. Therefore the description is quoted here.
The objective of geography for education is 'that man will see himself in his relation to his immediate and distant environment. This relationship changes continuously. In order to be able to determine his social and existential position, man must be able to orient himself in his environment and to acquire insight into the changes which take place in it.
On the one hand, man is part of an ordered environment; on the other hand, he causes changes in this environment through his own activities. Physical processes also cause changes independent of man. Thus a continuous reshaping occurs, either gradually or precipitately.
It is in the task of geography for education to make man thoroughly familiar with the existing physical-spatial and social-spatial structures as well as with the genesis of these structures and with the processes, especially those concerning spatial behavior and behavior in space which influence them. As a consequence of the continuing spatial reordering, man, during his lifetime, is constantly confronted with new relationships. The underlying aim is therefore that man will be able

and will dare to venture independently to acquire insight into spatial social relationships new to him'. (4)

This intrinsic enlightning function of geography has become more and more important in our 'global' world. People all over have the right to receive precise and clearfying information to understand the physical, social-economic and cultural-spatial disparities. Further democratization in the use of space means participation, and consequently information of geographical nature is needed. The increase of leisure time holds promises and possibilities for many emancipatory and existential activities; only high quality information will stimulate sound thinking, decision making and acting. Also, the elderly of the coming period are no longer worn out, but they are people still acting and enjoying their 'troisième age', asking for geographical information for all ends (e.g. residential settings and travelling).

INFORMATION FOR GEOGRAPHY EDUCATION

Although our physical and human geographical settings are continuing and potential sources of information and as such deliver food for the generating process, we have to be aware of the fact that people do not always experience or, more precisely, seldom do experience, their geographical settings as a primary source for information. If we want geography for education to achieve the aims stated, relevant geographical information must become available. The science of geography, then, which aims, among others, at discovering, analyzing, planning, formulating, describing and evaluating the phycisal and human spatial settings by means of empirical research, will and must function as a source when designing geographical information.

How this geographical information will be designed, depends on the objective of educational geography chosen. In this paper the emancipating man/society orientated vision was opted as the objective of educational geography. Designing geographical information of a man/society nature is an original, creative and professional activity, giving the educational information geographer his own identity. Choosing for the other extreme objective of educational geography, namely the scientific orientation, geographical information would be a translation of scientific results. In that case scientific findings must be adapted to educational purposes.

Of course such adaptions must have certain educational characteristics but as such are not original issues. Concluding, it is posed that there is a fundamental difference in the application of the science of geography for the man/society orientation or for the scientific orientation.

It was found that man/society oriented educational geographical information is not always what it could and should be.(5) Apart from wrong factual data which are rather easy to correct, it are especially the explanatory riches of geography which are missing. This in combination with the fact that the communication channels are steadily being improved, refined and extended, leads to the conclusion that there is a good deal of work to do for geographers specialized in educational information. They must, however, have a good knowledge of both geography and of information theory and its methods to obtain optimal results.

INFORMATION THEORY AND GEOGRAPHY EDUCATION

After having defined information and geography for education, it is time to consider which are the basic theory entities and processes for designing and processing educational geographical information. As a result of a long search and research period, the following theory entities can be presented:

- program of requirements
- concept and information structure as wel as their interplay
- complementarity of word/image and media-expression and their interplay
- evaluation.

We are fully aware of the problems of theory forming in the social sciences. There are many complexities and peculiarities in the social science subject matter when compared with the natural sciences and mathematics. As the American sociologist Merton, therefore, we see our efforts for theory forming as steppingstones on the road to the final goal.

Since no information theory in the sense of a theory for information provision did exist for geography and, as turned out, neither for other sciences, it was our task as first observers to give names to the entities distinguished. The four entities together show a logical structure, but it is possible and actually necessary to reflect on

each one seperately. All originated in educational geographical information research, as in order to 'see' and to 'pose' the theory entities, it is necessary to search in one's own field of science.

When forming a theory, the fundamental principles of 'observation', 'verification' and 'the origin of the terms used' have to be observed. The following will clarify those principles.

Observing has been extensive and scientifically underpinned. Based on the development of a methodology for designing and processing educational geographical information at the Utrecht University since 1973, the entities were formulated from experiences assembled in empirical research executed over many years and from research findings based on content analyses in the literature available. A first step to formulating a theory was put forward in a paper presented at the IGU-commission's meeting in Tsubuka in 1980. (6)

Verification is a process of induction, it aims at giving a restricted number of research findings a more general validity. It has turned out that educational geography information workers do make use of the theory entities, and found them a necessity in their daily work. (7) In to-day's paper-session, Paul van de Boorn's contribution clearly illustrates the above. (8)
To what extent the entities find verification in the other social and human sciences such as political, social-economic and art history, economics, sociology and public relations, is to be looked into. However, listening carefully to the reactions of interested colleagues from those sciences, there are indeed reasons to presume such verifications.

When considering the *origin of the terms used* for the entities, it should be noticed that *program of requirements* is adopted from the theory of industrial design. The program of requirements, having both formal and material aspects, is a very essential element of the theory. It encompasses the firmly consolidated fundamentals of the information as such and through this contains the means for further planning. Before the term program of requirements was adopted, 'objectives' was the term used. But this term was too heavily oriented to the target group, whereas the target group is only known in general terms.

The terminology *concept structure and information structure* has come into being in a very early stage of the research. It covers the intrinsic value of the words and forms an unbreakable entity. During the ten years of work constructing the theory, it was observed that in society the term concept structure came into use in a footloose way when talking of 'ideas' to design.

The *complementarity of word and image* is a main issue when the expression of an idea is concerned, and only in the realisation phase is this related to the medium concerned. Research of early as well as of recent dates shows that output respectively input is picked up more efficiently if word and image complement each other. It is not the type of medium as such giving better or lesser results, but it is the complementarity of both means of expression. With image is meant all visual material:

- true to nature (e.g. photographs or documentary films of landscapes and urban situations)
- true to structure (e.g. maps, sketches)
- true on analogy of relations, represented symbolicly (e.g. circle diagrams, stream-diagrams, cartograms, special schemes).

Unfortunately the various research findings have not yet been put together in any form of literature. This might be due to the great variation in the origin of the research fields (educational geography mass-communication research, educational research, educational technology, instructional technology). Also, the often so manifestprimary interest for the educational implications of the media might play a role.

Evaluation is a term widely used nowadays for any functional feedback on output/input. By nature, evaluation may have many different forms, may take place at many different moments and can vary from time to time.

The study of the theory entities distinguished is being continued in the light of educational geographical information design. Attention is being paid to each entity individually as well as to the (logical) structure of the entities. See p.e. for the role of educational philosophies in designing geography information the paper Rob van der Vaart prepared for this symposium session. (9)

When discussing the fundamental principles of theory development, one of the aspects mentioned was the support derived from the research done on the development of a *method* for designing educational

geographical information. During the research much time was lost in disengaging us from the straight-jacket of curriculum planning apparently so close to information design and also a leading educational philosophy in the Seventies.
The findings were laid down in a model. The model, sharp cut as a model is, should be seen only as a route, a guide, in the very complicated process of information design, here of educational geographical information. The model has been introduced on different occasions (symposia-papers, articles, conferences).(10)

ILLUMINATING THE THEORY

In order to give the reader more insight in the steppingstones of the theory some illustrations will now be presented. Flesh and blood is bestowed on two of the information theory entities discerned, namely, the program of requirements and the concept structure and information structure. These two were choosen because they are fundamentally new. whereas the other entities, complementarity of word/image and media-expression, and evaluation, have been studied for a number of years.

The *first* illustration concerns the program of requirements and is derived from a exercise doctoral students of Geography for Education, Utrecht, have executed. Such exercises are a follow-up of the colloquium on theory and methods of educational geography research and preceed the student's graduate project and thesis.
After introducing the entity program of requirements in the theoretical setting, the students, working in small groups of 2 or 3, are requested to analyze final geographical information output, and to discern what the program of requirements of that output would be. These exercises are scientifically delicate and rather demanding. Executing the assignment calls for observing a certain distance to the already realized final information output, whereas any confrontation with a final product means an almost natural invitation to take a stand and to make value judgements.

However, studying the program of requirements in practice, students become aware of the meaning of a program of requirements and of the necessity of constant decision taking in a very lively way. This making and taking of decisions when designing information is to be done within a carefully considered framework planned beforehand which must be kept in mind throughout the processing procedure. At the same time the

framework is a type of planning devise which does not effect the creativity nor the originality of the information to design.

EXERCISE

In the Royal Tropical Institute of Amsterdam a small exhibition named 'Man and Environment' has recently (spring 1983) been opened. Visit and study this exhibition, examine the constitutional aspects of this exhibition along the lines of the formal characteristics of a program of requirements as discussed.

The students' answers are fully reported; the group consisted of two students: Roger van Domburg and Herman Struijlaart; date of the report: september 15, 1983.

RESPONSE

The exhibition must be seen as an information entity. When analyzing 'Man and Environment' considering the six formal theory characteristics, we distinguished four aspects, namely the theme, users, content and means. (The six formal characteristics are: validity, completeness, operationality, redundancy, scope, accessibility. V.-M.)

Theme

- The title 'Man and Environment' must cover the content of the information entity (i.e.). In this case attention is paid only to man and environment in the (sub)tropics, as can be expected in a tropical museum.
- The i.e. must satisfy the demands of the principal, the Royal Tropical Institute. These demands are: 'The introduction of the daily life of people in (sub)tropical countries and within this especially the appearing or completed transformations as well as the relationships of the (sub)tropics with the temperate zones' (see the info-folder of the Tropical Museum).
- The theme of the i.e. is man and environment in the (sub)tropics grouped around the concepts: 'over-population', 'deforestation' and 'misuse of the land'.
- The i.e. must refer to actual and future development, and to the societal relevance of the theme.
- The knowledge obtained through the i.e. also has applicability in other situations.

Users

- The i.e. adresses all people with at least basic education.
- The i.e. aims at formal, non-formal and informal education and as such is multifunctional.

Content

- The i.e. should give facts and provide insight in the theme. Providing insight refers especially to the interrelationship between phenomena.
- The i.e. should be objective, in the sense of not forcing an opinion on the user.
- The i.e. should be coordinated with other information in the Royal Tropical Museum.
- Viewing/watching the various photographs, utensils etc. carefully is a valuable skill which must be practiced. Apart from comparing the images with each other, comparing them with our own situation is of eminent importance.
- The i.e. should give a hopeful picture of the theme and as such is to be non-fatalistic and aimed at 'problem solving'.

Means

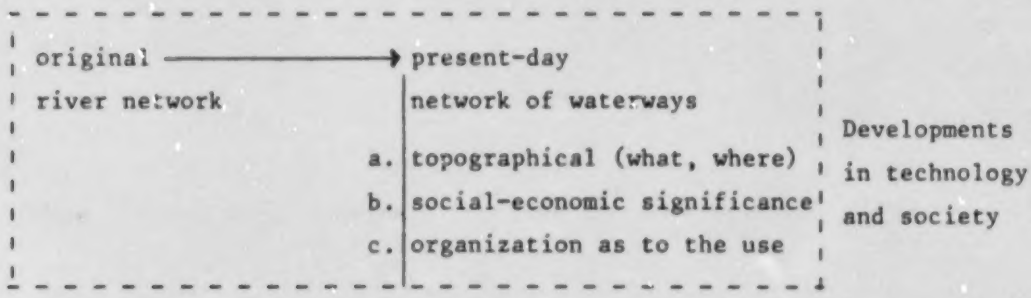
- The i.e. will be in the format of an exhibition.
- The 'author', designer, of the product and the producer are in this case a team of staff-members of the Royal Tropical Institute. The team must pay attention to the following requirements:
  - the exhibition should be payable;
  - the exhibition should have a multimedial character; photographs, diagrams, utensils and stylized situations have to be complementary with the text. Video-programs on the other hand should give further information to the more interested people;
  - texts should be short, inviting and enjoyable to read, moreover they should be understandable.

Taken all together, the design of the exhibition should serve the content.

So far the first illustration.

The *second* example is an illustration of a concept structure and information structure as well as their interplay (in principle).
A graduate from Geography for Education, University of Utrecht, Drs. Foske Boerema, has designed the content for an educational geography film: 'Waterways of Europe', principal International Council for Educational Media. The commission was carried out along the principles of the information theory stated. Considering the output, a film-script, the concept structure and the information structure were of a definite design.
The concept structure must be seen as a schematic summary of the synopsis, the information structure is in script format. Characteristic of this script is that, besides the columns expressing the visual and the text-elements, a third column has been introduced to render account of the chosen information content and its expression. The introductory page of the script together with the third column of the script will be the basis for discussion between the producer and the 'author' of the script.
Of the total output the concept structure and some pages of the script (information structure) have been presented. Also included is the page introducing the script, as here the procedure used when developing the information structure from the concept structure was implicitly referred to. From a theoretical point of view a fundamental interrelationship exists between these two structures which is most difficult to bridge.

The Concept Structure of 'Waterways of Europe' (dated May 1983)


original river network
present-day network of waterways
a. topographical (what, where)
b. social-economic significance
c. organization as to the use
Developments in technology and society

The Information Structure = Script of 'Waterways of Europe' (dated February 1984)

Given are the introductory page of the script, and from the script itself the first two pages, covering the sequences no.1 up to and including 4, as well as the last page, sequences no. 23 and 24. We emphasize that it is the aim to illuminate aspects of information theory for education geography with an existing example and not to show the geographically most interesting passages of the script.

Introductory page of the script 'Waterways of Europe'

As the film 'Waterways of Europe' is to be approached from a European viewpoint, emphasizing the human aspect, the choice was made to limit the subject to the aspects of communication. Within this limitation, three important aspects were selected as a basis for the script, i.e. a) the development of the waterway network; b) the functions of the waterway network and c) some overall aims man is trying to achieve.

When writing the following script, I used a rather point to point approach. This to avoid lengthy descriptions, which could become tedious and which would not give any extra information.
In order to be able to describe the types of shots briefly and clearly, I used the following abbreviations:

Z/I = zoom in	MCU = medium close up
Z/O = zoom out	CU = close up
W/A = wide angle	H/A = high angle
LS = long shot	L/A = low angle
MS = medium shot	

The disadvantage of the point to point approach and the use of abbreviations is that at times the rythm of the film seems to be meant to be very staccato. This was not my intention, as to my idea the rythm should be fluent.

Not always did I specify to include people in the shots. However, to emphasize the fact that the European waterways are part of real life, people should be included in the shots whenever possible, also when not mentioned specifically.

I am well aware of the fact that the feasibility of the animation techniques included is closely related to the financial possibilities, as it is a costly proces. The same holds for the use of a model instead of a map of Europe. The first would be more expressive, but also more costly than the use of a map.

I have included a list of possible locations*. The numbers on the list of locations correspond with the numbers of the visuals. The list is meant to give some suggestions only and is open to any other suggestions.

Foske Boerema

*and a number of geographical maps to be used for the final cartographic designs

Script

WATERWAYS OF EUROPE

NO	VISUAL	TEXT	CONSIDERATION
1	CU of water and Z/O to W/A of canalized river with light barge traffic. Superimpose logo and title.	no text (music)	Canalized river: combination of natural and human aspects of waterways. Barge traffic: waterways as communication system
2 a b c d e f g	Dissolve to fluent shot sequence of river segments in their natural state: -Waterfall (CU; Z/O to MS). -Entrenched river segment, meandering (H/A; MS in upstream direction, pan to downstream direction). -Rapid (MS; Z/I to MCU, downstream direction). -River segment in narrow valley with gentle slopes, some barge traffic (MS; move downstream with river). -River segment in wide valley, hills in distance, some barge traffic (MS). -Shallow part in river (MS; Z/I to MCU, downstream direction). -Very wide river in flat area, some barge traffic (MS to W/A, pan from upstream to downstream; Z/O to LS disappearing at river's horizon).	no text (sound effects of running water)	Northwestern, central and eastern Europe have been favoured with many medium sized rivers, partly navigable, partly not. General introduction, giving first impression of rivers in their natural state, often not navigable upstream and downstream navigable. This introduction leads to first part: 'Development of Waterway Network'.

NO	VISUAL	TEXT	CONSIDERATION
3	Dissolve to fluent shot sequence of drawings/paintings of:	"These European rivers have been used for centuries."	The European rivers have been used for centuries for navigation purposes.
a	-People using raft on river.		The various pictures chosen to indicate the use of the rivers in different historical periods.
b	-People using boats made of e.g. animal hide or hollow treetrunks.		
c	-Romans transporting goods or troops on boat.		
d	-River transport in Middle Ages.		
4	Dissolve to fluent shot sequence of cities that have developed on a river:	"And saw the development of many cities on their banks."	Many European cities developed on the river banks due to the importance of rivers (or river valleys) as transportation routes.
a	-Picture of Roman town situated on a river, activities on the river.		Given are one example of a Roman city through time, and one example of a Medieval city.
b	-Picture of same town from same angle, later period in history.		
c	-Shot of same town today from same angle, barges passing by (start of shot same as a and b, then Z/O).		
d	-Picture of town in Middle Ages situated on river, activities on the river.		
e	-Shot of same town today from same angle, river traffic (start of shot same as d, then pan to river and Z/O).		

NO	VISUAL	TEXT	CONSIDERATION
23	Dissolve to a fluent shot sequence of barges at a frontier:	"In the meanwhile, some problems concerning the regulation of international inland waterway transport have come up. These must be solved, so that an optimal use can be made of the waterway network."	Due to the construction of the Rhine-Main-Danube canal, it has been realized that very soon two major river systems, functioning under two different economic systems, will be integrated. New regulations must be made to avoid problems that could arise from this integration.
a	-W/A view of border town on river, Z/I to the frontier station for shipping.		
b	-Barge seen approaching from distance, police launch seen approaching barge, Z/I when alongside.		
c	-MS of barge mooring for formalities, Z/I to flag.		
d	-Panning view of other barges moored, carrying different flags.		
e	-Barge moving upstream from frontier (MS and Z/O to LS).		
24	Dissolve to fluent shot sequence to be used as background for the titles:	no text	This final sequence is used to give a very brief overview of the first section, the development of the waterway network, to refreshen what was seen first.
a	-Waterfall (CU; Z/O to MS), (2a).	(sound effect of running water.)	
b	-River segment in narrow valley, some barge traffic (MS, move downstream with river), (2d).	(music)	The numbers refer to the shots as used earlier in the script.
c	-Canal alongside to river, barges on canal (W/A, MS), (8b).		
d	-View of locks of barges being sluiced (W/A), (9i).		
e	-Panning view of 2000t canal, barges moving away from camera.		

NEW JOB PERSPECTIVES FOR EDUCATIONAL INFORMATION GEOGRAPHERS

Traditional employment for geography teachers is fundamentally changing as a consequence of demographic changes, the field is decreasing in the western world and increasing in the non-western world. At the same time we are entering the information and communication society with its changing functions of school-education. Moreover there is a growing demand for geography information for adult education, continuing education and for the broad field of information provision. Functions change and disappear, new functions take their place.

For the new types of information jobs the knowledge of information theory and methodology skills for designing geographical information are required. Whereas geography teachers needed the well known classroom communication skills in the first place, we pose that the skills required for functions related to designing geography information are, in the first place, the handling of the science of geography for informing purposes.

It is our experience that graduates acquainted with and practising geography education information processing procedures (besides having had teacher education training) and applying for a teaching job, do get priority. This is due to the fact that for project work, excursions specific examination topics, regional items and field work, geography information often has to be designed. This experience is supported by Dr. Frances Slater in her symposion paper (11).

For the same reason education information geographers (also with teacher training) are preferred when applying for jobs concerning adult and continuing geography education.

To handle and to design educational geography information is a must in many modern jobs and at all levels of communication and management. Relating to our experience since 1973, we think of spatial planning at the governmental, regional and local level; of information provision for environmental problems, educational and social tourism, recreation facilities, urban renewal and educational reorganisations; of editorial functions for geography publications; of information provision about energy problems, third world regions, new-industrial countries, third world-western world relationships, and so forth (see also note 7).

Especially in this field of geography information with its distinct aspects of modern education, we saw a manyfold of new jobs for education geographers opening up. We recommend students to specialize in a thematic and/or regional area and to study specific media-methods besides information theory and methods, as Foske Boerema did for her free lance work on the film 'Waterways of Europe'.

NOTES

1. H.S.Verduin-Muller, *Geografie en informatievoorziening* (Geography and Informationprovision) 31 p. Cocma-lecture nr.25 Amsterdam, Meulenhoff Educatief, 1982.

   A.Smith, *The Geopolitics of Information*, London, Faber and Faber, 1980.

2. B.Goss, *Processing Communication*, Belmont (Cal.) Wadsworth, 1982, p.23.

3. E.Faure, *Learning to be*, UNESCO, 1972.

4. H.S.Verduin-Muller, *Theses on designing and dissemination of geographical knowledge*, thesis nr.1. Paper 23rd Congress IGU, section Geography Education, Moscov, USSR, July/August, 1976.

5. - Author's dissertation research as to the quality of educational geographical information and excecuted in the early sixties. *Leren met beelden* (learning from visual abstracts), Groningen, Wolters, 1964.
   - Work done in training geography teachers at Utrecht University Institute of Education, 1963-1973, *Leren van Hospiteren* (Learning from attending classes), Groningen, Wolters, 1967 .
   - As chair person of the Board of Management of the Information and Documentation Centre for the Geography of the Netherlands involved in conferences on geography textbook analysing. Management by Drs.H.Meijer. Exchanges and reports with FRG, 1973, 1978, 1982; UK. 1975; Belgium,1976; Japan, 1980; Roemenia, 1980/81; France, 1981; Italy, 1982; USA, 1982/83.
   - The outcome of studies on content analysis of mass media programs with geography components as done by Peter Gould, Pennsylvania State University, University Park (Penn.). See a.o. P.Gould and A.Lyew-Ayee, *Jamaican television: Images and Geographic Connections*, in Caribbean Geography, Vol.1, Nr.1, May 1983, Jamaica, Kingston, Longman, 1983 p. 36/50.
   - Research done as to educational geographical information, period 1973-1984, Department of Geography for Education, University of Utrecht, Utrecht. The Netherlands. ± 55 projects are finished by spring 1984. Output, process descriptions and thesis mostly in Dutch. A full list of projects is available.

     In English (+ Dutch): *On European Population, Demographic Developments*, 1982, Output in print, part A, Text; part B, Visual Material.

     In English, also in German (+ Dutch), *Conflict in Landuse in South Holland/East*, 1976, *Raumkonkurrenz in Süd-Holland-Ost*, 1976. Output: tape-slides series, narration also in print.

In English (+ Dutch), output, *Two hundred years of labour-market in Utrecht,* 1978, part of the output; a tape-slides series, narration also in print.

In English (+ Dutch), *Living in Maarssenbroek, living in a newly built quarter,* 1984, process description, output and evaluating the output (available in November 1984).

6. H.S.Verduin-Muller, R.van der Vaart, *Experiences with a conceptual curriculum model for geography, from theses to system,* 24 p. Paper 24th Congress IGU, Symposium of the "Commission Geographical Education, Tsubuka, Japan,1980.

7. Educational geography information workers are those Geography for Education graduates from the Utrecht University who found a job in the field of information provision on behalf of decision-making processes (management functions) or on behalf of informing and programming. Employers include the Ministeries of Education and Science, Foreign Affairs, Interior Affairs, Transport and Public Work, and of Welfare, Recreation and Culture; Town and Country Planning Insitutions, Regional Planning Participation Services, Environment Studies and Services, Third World Institutions, and Editing departments of Publishing firms. Also a great variety of freelance geographical information work is done.

8. P.van den Boorn, *Providing information of Third World Countries for the informal field of education; new opportunities for regional Geography,* 15 p. Paper: 25th Congress IGU, Symposium of the "Commision Geographical Education", Freiburg i.Br. FRG, August 1984.

9. R.van der Vaart, *The role of educational philosophies in geographical information design.* 8 p. Paper: 25th Congress IGU, Symposium of the "Commission Geographical Education", Freiburg i.Br., FRG, August 1984.

10. H.S.Verduin-Muller, R.van der Vaart, H.Hoitink, G.Verschuren, A conceptual model for curriculum planning in geography. In: *Geographical Education: Curriculum problems in certain European countries with special reference to the 16-19 age group,* N.J.Graves (ed.) London, University of London, Institute of Education, 1978, p.6-41.
German version, Konzeptionsmodell für die Curriculumplanung in der Geographie und Realisation geographischer Informationseinheiten. In: *Curriculumarbeit in Europäischen Staten,* Der Erdkundeunterricht, Heft 37, R.Geipel und H.Schrettenbrunner (Hrg.), Stuttgart, Klett, 1981, p.37-58.

H.S.Verduin-Muller, R.van der Vaart, *The geographical information educationist, the why, what and who of a new profession.* Paper Regional conference of the International Geographical Union, Commission Geographical Education, Ibadan, Nigeria, 1978, 18 p.

H.S.Verduin-Muller, *Geographers in the post-industrial age.* Paper for the congress of the National Council for Geographic Education, Mexico, Mexico City, 1979, 11 p. On microfiche published by Eric Clearing House for Social Studies and Social Science Education, Boulder, Colorado, 1980.

Idem, Das Partizipations-Projekt Randstad-2, entwickelt am Utrechter Curriculum-Modell. In: *Bremer Beiträge zur Geographie und Raumplanung,* G.Feller und W.Taubman (Hrg.), Bremen, Universität Bremen, 1982, p.296-311.

Idem, *About the identity of the informational geography for formal, non-formel, and informal educational purposes.* Paper for the congress, of the National Council for Geographic Education, Jamaïca, W.I., Ocho Rios, 1983, 12 p.

Idem, Broadening geography education. In: *Geographical Education and Computer Assisted Learning in Geographical Education.* N.J.Graves (ed.) London, University of London, Institute of Education, 1984. Published for the Symposium of the IGU-commission Geographical Education (25th IGU-congress), Freiburg in Br. FRG. August 1984.

11. Fr.Slater, *Participation in information processing in geography education.* 14 p. Paper 25th Congress IGU, Symposium of the Commission "Geographical Education", Freiburg in Br. FRG. August 1984.

THE ROLE OF EDUCATIONAL PHILOSOPHIES IN GEOGRAPHICAL INFORMATION DESIGN

International Geographical Union
25th. Congress, Paris, France

Commission on Geographical Education
Paper: Symposium, August 20 - 25th. 1984
Freiburg i. Br., Federal Republic.

R. van der Vaart,

Department Geography for Education
State University of Utrecht,
Utrecht, The Netherlands

The role of educational philosophies in geographical information design

R. van der Vaart
Dep. of Geography for Education
State University of Utrecht, Netherlands

The problem

During the last fifteen to twenty years an enormous amount of studies has been published about geographical education. Basically, these publications may be divided into two groups. One group of publications is mainly concerned with the intentions or aims and goals of geographical education, in the context of a rapidly changing society. These publications are 'philosophy' statements, reflections upon the function of geography in education. Publications of the second group are results of empirical research in curriculum development for geography, geographical information design or learning processes in the geography classroom.
Regrettably there is a large gap between the two groups of studies mentioned. In many curriculum development projects for geography the process of designing and producing curriculum materials seems to be more or less unrelated to the aims and goals initially stated. It is obvious, however, that the decisions one takes in designing geographical information (p.e. curriculum materials) should be related in some way to initial statements on aims and goals.
It is the purpose of this paper to provide a framework for combining our knowledge of educational philosophies, as far as it is relevant for geography, with our knowledge of the process of geographical information design. In my opinion the framework presented may be helpful in rendering geographical information design more systematic and goal-orientated.

In the first section of this paper four main educational philosophies or 'education concepts' will be identified and characterized. In the next section the decisions to be taken during the process of geographical information design will be identified on the basis of a model developed in the department of Geography for Education of the University of Utrecht. In the remaining sections I shall try to illustrate systematically and stepwise how each of the education concepts 'colours' the process of geographical information design.

Education concepts

An education concept is an explicitly formulated idea about the function and subsequent organization of education (1). In an education concept the following three aspects are taken into consideration more or less coherently:
- one's opinion about the nature and usefulness of our (scientific) knowledge;
- one's opinion about the situation and probable and/or desirable direction of society;
- one's ideas about development and growth of the individual (learner).

Authors in the fields of curriculum development, communication and information use many labels which have a meaning more or less identical to the above mentioned definition of 'education concept': curriculum concept, information philosophy, educational philosophy. The three aspects mentioned (knowledge or disciplines; society; learner) are generally being considered as the corner stones of an education concept. Tyler already identified these three aspects in his classical book on curriculum development (2).

The crucial point here is the realization that in any valid education concept the underlying ideas about the relationship between disciplines and education, between society and education and between education and individual growth and development should be mutually connected and should form an integrated and logical whole.

The widespread idea, for example, that the American High School Geography Project of the sixties was primarily based upon fascination with new developments in the discipline of geography and not upon assumptions about society and individual development and growth, is at least misleading. In fact the American Curriculum Reform Movement of the fifties and sixties, which was the context of the HSGP, was based upon an education concept characterized by great confidence in the value of scientific concept structures and methods for daily life, by technocratic ideas about societal change and guidance and by emphasis upon the cognitive and intellectual aspects of individual development, As a whole, such an education concept may be called 'discipline-orientated', but at the basis of it there is a related set of ideas about disciplines and society and development of the individual.

Four basic classes of education concepts may be identified:
- discipline-orientated education concepts,
- society-orientated education concepts,
- life-orientated education concepts,
- learner-orientated education concepts.

The basic characteristics of each of these classes are summarized in fig. 1. This table is based upon an extensive study of the literature concerning typologies of education concepts (3). Of course there may be numerous individual education concepts within each of the four classes that differ in degree.

A model for geographical information design

It is the central thesis of this paper that education concepts will 'colour' the decisions one takes in designing geographical information. Before we can go into this thesis in more detail, we shall first have to identify which decisions should be taken in designing geographical information. It is a well known fact that traditional strategies for curriculum development do not offer many handholds for the process of designing information, as contained in a textbook or an exhibition. The level of abstraction of curriculum development strategies is far too high for such purposes. Of course, there are also strategies for 'curriculum planning' at the more concrete level of 'instructional design' or 'learning system design' (4). But such strategies are concerned with designing learning situations; information in the form of textbooks or other materials is supposed to be available or easily obtainable. Designing such information is not considered as a problem in itself. Nevertheless, as geographers we know that designing geographical information in a systematic way is a problem. In the department of Geography for Education

UNDERLYING ASSUMPTIONS ABOUT / CLASSES OF EDUCATION CONCEPTS	DISCIPLINES	SOCIETY	LEARNER
DISCIPLINE ORIENTATED	powerful ideas from disciplines enable man to organize experiences, to behave rationally and to anticipate results of behaviour	technocratic view of society; scientific knowledge crucial for societal guidance	learner's higher order cognitive development main concern of education; man should develop rational powers
SOCIETY ORIENTATED	disciplinary knowledge useful for education in as far as it serves critical analysis of problems and conflicts in society; multidisciplinary perspective	emphasis upon structural and fundamental injustice in society; people should be educated for political participation or action	develop attitudes and opinions about problems in society; take responsibility for societal change
LIFE ORIENTATED	disciplines offer powerful knowledge for development of learner, as individual and member of society; this does not automatically apply to all scientific knowledge	society in open-ended evolution; changeable by man through democratic procedures	life-world of learner should be qualitatively changed and systematically enriched, both emotionally and intellectually
LEARNER ORIENTATED	any disciplinary knowledge may be valuable for individual development, if learner shows interest	rules and institutions in society are constraints for unfoldment of creative potential of individual	learner should unfold and develop freely with as little limitations as possible

FIG. 1. Basic characteristics of the four classes of education concepts

of the Geographical Institute of the University of Utrecht the process of designing geographical information has been studied systematically for about ten years. These studies have resulted - among others - in a model for geographical information design (fig. 2); this model and the ideas underlying it were presented in a number of publications by Verduin-Muller (5).

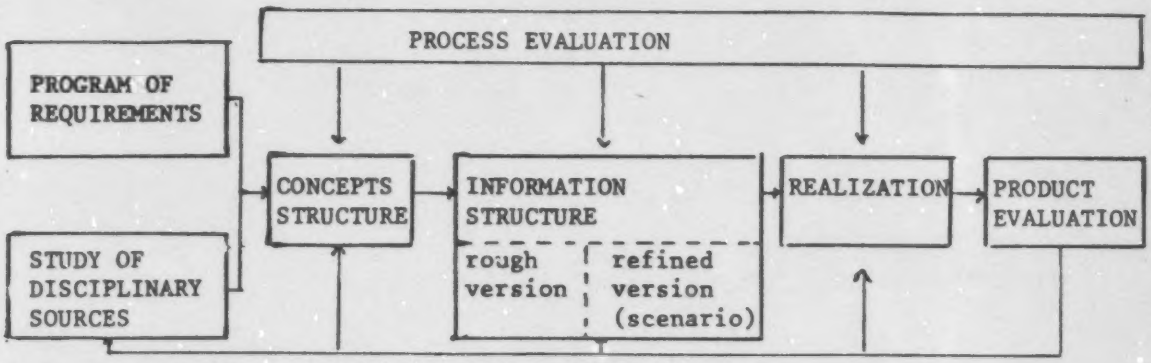


FIG. 2. A model for geographical information design

It is not the purpose of this paper to go into this model as such in detail. In the following paragraphs I shall try to show how decisions to be taken in each of the phases of this model may be influenced by education concepts. Learner-orientated education concepts will not be included in this discussion, because such education concepts cannot - almost by definition - offer guidelines for systematic information design. In learner-orientated learning situations any information material may be used if students show interest in it.

Program of requirements

A program of requirements for an information unit of educational material consists of requirements or 'targets' concerning goals, central themes, form and format, costs, time needed for design and for use, criteria for the suitability of the information unit for a specific target group, etcetera. In this paper most of these requirements will be discussed in the context of that phase of the design process in which they should be met. Requirements concerning central themes, for example, will be discussed in the paragraph about the concepts structure. Only three aspects of a program of requirements are mentioned in this paragraph: goals, information about the target group needed for the design process, type of material to be designed. The possible impact of education concepts upon decisions about these three aspects is summarized in fig. 3.

	DISCIPLINE-ORIENT. EDUCATION CONCEPTS	SOCIETY-ORIENT. EDUCATION CONCEPTS	LIFE-ORIENT. EDUCATIONCONCEPTS
ASPECTS OF PROGRAM OF REQUIREMENTS			
goals	program should stimulate higher order cognitive activity and should therefore be based upon disciplinary concepts and methods	program should contribute to critical understanding of problems in society and invite learner to develop values and points of view	program should enrich learner's perception of him/herself as individual and member of society and should stimulate process of reflection

(FIG. 3 - continued on page 5)

	DISCIPLINE-ORIENT. EDUCATION CONCEPTS	SOCIETY-ORIENT. EDUCATION CONCEPTS	LIFE-ORIENT. EDUCATION CONCEPTS
ASPECTS OF PROGRAM OF REQUIREMENTS (continued)			
information about target group needed for design process	pre-existing level of disciplinary knowledge and cognitive achievement	pre-existing awareness of structural problems and conflicts in society	general aspects of social experience and expectations of target group
type of material to be designed	mainly 'structured' materials for closed learning situations	mainly 'raw material' for open learning situations	mixture of structured materials and more open information for reflection

FIG. 3. How education concepts may 'colour' decisions about program of requirements

Study of disciplinary sources

The consultation of books, articles and data in any other form is of course a continuous process during geographical information design. Nevertheless the main point is the initial orientation about a subject in the beginning of the design process: this is the phase of 'study of disciplinary sources' in the model. It is obvious that the type of sources and data one consults during the design process will vary with one's education concept (fig. 4).

	DISCIPLINE-ORIENT. EDUCATION CONCEPTS	SOCIETY-ORIENT. EDUCATION CONCEPTS	LIFE-ORIENT. EDUCATION CONCEPTS
STUDY OF SCIENTIFIC SOURCES	theoretical geography is main source for the identification of 'organizing principles': concepts, models, methods	sources from a variety of disciplines, as far as such information is functional for conflict analysis	sources from geography and from neighbouring disciplines, if considered useful for present and future life of learner

FIG. 4. How education concepts may 'colour' decisions about study of disciplinary sources

Concepts structure

After the formulation of a program of requirements and the study of disciplinary sources a concepts structure for the information unit will be designed. This concepts structure is a visual presentation of the themes, structures, processes as well as the mutual relationships between these elements, that will form the core of the information unit.
Again, one's educational philosophy or education concept will 'colour' the type of concepts structure that is being designed. The influence of education concepts upon the formulation of a concepts structure is shown in fig. 5.

	DISCIPLINE-ORIENT. EDUCATION CONCEPTS	SOCIETY-ORIENT. EDUCATION CONCEPTS	LIFE-ORIENT. EDUCATION CONCEPTS
CONCEPTS STRUCTURE	concepts structure in a strictly scientific sense: a set of concepts that form geographical generalizations or models	diagram of conflict or problem-determining factors (e.g. parties; their interests; their backgrounds; their values); loosely structured	diagram of mainly geographical concepts, rather loosely structured, constructed for gaining insight into relevant aspects of life

FIG. 5. How education concepts may 'colour' decisions about the concepts structure

Information structure

On the basis of the program of requirements, of knowledge of the subject concerned (via study of sources) and of the concepts structure, the information structure of an information unit can be designed. Making an information structure implies the design of a sequence for the information unit and the choice of adequate means of expression (e.g. text, diagrams, schemes, photos, maps, etcetera). At first a rough version of the information structure will be designed; the next step will be the refinement of this version toward a 'refined information structure' or a scenario for the information unit. During this process a lot of supplementary study of sources and data will be necessary in order to design case studies or examples of the central theme of the information unit. The activities and choices during this phase will again be influenced by one's education concept (fig. 6).

	DISCIPLINE-ORIENT. EDUCATION CONCEPTS	SOCIETY-ORIENT. EDUCATION CONCEPTS	LIFE-ORIENT. EDUCATION CONCEPTS
INFORMATION STRUCTURE:			
characteristics of refined version	scenario inspired by principles of cognitive learning: from examples toward generalization (discovery learning) or vice versa (reception learning)	scenario inspired by principles of conflict analysis and value teaching	scenario inspired by logic of subject matter and by experiences of learners; built-in materials for reflection
supplementary study of sources	data for case studies illustrating generalizations	factual data about problem or conflict concerned: not as illustration but as argument	factual data both used as illustration of principles and as information valuable in itself

FIG. 6. How education concepts may 'colour' decisions about the information structure

Realization

During the phase of realization of an information unit, the scenario or refined information structure is worked out in the form of a final information unit. Testing educational materials in educational practice and revising them may be a part of the realization phase. The realization phase requires a whole range of practical skills in formulating texts, shaping geographical information in visual or other forms, etc. Such skills in themselves are of course independent from one's education concept. Nevertheless, realized information units will vary in character with the education concepts of the designers. Some of these variations are expressed in fig. 7.

	DISCIPLINE-ORIENT. EDUCATION CONCEPTS	SOCIETY-ORIENT. EDUCATION CONCEPTS	LIFE-EDUCATION CONCEPTS
REALIZATION	modes of presentation of information highly inspired by data forms geographers use (e.g. maps, tables, etc)	mainly expository materials as a basis for open learning situations; 'documents humains' (from novels etc) for value teaching	discipline-specific modes of presentation are being used, but 'human element' in material is of central importance

FIG. 7. How education concepts may 'colour' decisions about realization of information units

Process evaluation and product evaluation

Process evaluation is a form of self-imposed control over the design process. Although information design is a highly subjective process of making subsequent choices, it is necessary to be as systematic as possible and to base decisions in the design process upon decisions taken in previous phases. Process evaluation is continuous reflection upon the logic and continuity of this design process. Product evaluation should be based upon the program of requirements initially formulated. Therefore, evaluation programs will vary with the education concepts of the designers. But as an evaluation program will be logically connected with a program of requirements, I shall not present a separate diagram of evaluation decisions in relation to education concepts.

Concluding remarks

The framework presented in this paper was designed in order to bridge the gap between education concepts or educational philosophies on the one hand and the practical task of designing geographical information units on the other. The diagrams presented (fig. 1-7) are in fact the core of this paper. It is my hope that these diagrams may provide a useful instrument for thinking about systematic and goal-orientated information design. Nevertheless, geographical information design will always be a process of deliberation, of creativity and (inter-)subjective choices. In my opinion it is this creative element of designing high quality information units that is the most fascinating aspect of this kind of work.

Notes

(1) This definition is presented in: Nijhof, W.J. (1979), About the function of education concepts in the context of curriculum development (in Dutch). In: Nijhof, W.J. (ed.), Aspects of Curriculum Development (in Dutch), p. 7-37. Groningen: Wolters-Noordhoff.

(2) Tyler, R.W. (1949), Basic Principles of Curriculum and Instruction. Chicago: The University of Chicago Press, p. 5-33.

(3) Vaart, R. van der (1982), Education concepts and curriculum development (in Dutch). Enschede: Stichting voor de Leerplanontwikkeling.
Vaart, R. van der (1982), Education Concepts. How ideas about education work through... (in Dutch). Enschede: Stichting voor de Leerplanontwikkeling.

(4) See for example:
Kemp, J.E. (1971), Instructional Design. A Plan for Unit and Course Development. Belmont, Cal.: Fearon Publ.
Gagné, R.M. & Briggs, L.J. (1974), Principles of Instructional Design. New York: Holt, Rinehart and Winston.
Davis, R.H., Alexander, L.T. & Yelon, S.L.(1974), Learning System Design. An approach to the improvement of instruction. New York: McGraw-Hill.

(5) See for example:
Verduin-Muller, H.S. (1976), Theses on designing and dissemination of geographical knowledge. Paper presented at the 23. IGU Congress, Moscow.
Verduin-Muller, H.S. et al (1978), A Conceptual Model for Curriculum Planning in Geography. In: Graves, N.J. (ed.), Curriculum problems in certain European countries with special reference to the 16-19 age group. London: University of London Institute of Education, p. 6-41.
Verduin-Muller, H.S. & Vaart, R. van der (1980), Experiences with a conceptual curriculum model for geography, from theses to system. Paper presented at the 24. IGU Congress, Tsubuka, Japan.
Verduin-Muller, H.S. (1982), Geografie en informatievoorziening. Amsterdam: Meulenhoff Educatief.
Verduin-Muller, H.S. (1984), De geïnformeerde mens. Amsterdam: Meulenhoff Educatief.

PARTICIPATION IN INFORMATION PROCESSING IN GEOGRAPHY EDUCATION

International Geographical Union
25th. Congress, Paris, France

Commission on Geographical Education
Paper: Symposium, August 20 - 25th 1984.
Freiburg i. Br., Federal Republic.

Dr. Frances Slater,
University of London
Institute of Education

20 Bedford Way,
London W.C. 1H OAL,
England

Participation in information processing in geography education.

Frances Slater
University of London Institute of Education
20 Bedford Way, London WC1H OAL, England.

The information based society

In several papers by Henriëtte Verduin-Muller in recent years my attention has been drawn away from the fairly narrow concepts of teaching and lesson planning to the concepts of information processing and the geographical information educationist. Of importance too, the work of the Utrecht department is focussed on information processing for adults in a post industrial society. I have found their formulations thought provoking and hence I find myself contributing to Theme B in 1984 although my contribution was to Theme A in Tokyo.

I began as a result of reading the Utrecht papers to see teacher education more broadly, to see it as just one sector in a huge information processing industry underpinning the information based society, successor to the industrial society. The very concept of an information based society should hearten educators in a period of recession and give us clues as to where future developments lie.

Opportunities for geographers

Geography departments in British, North American and Commonwealth countries have yet to see the opportunities for them and their students in offering courses and specialist units in geographical information processing. We are living in an information and communication based society where the desire and the demand for information grows daily as does the technical capacity for handling it. As we develop new concepts of work and solve the problems as yet characterised as unemployment, we are going to find people choosing to occupy (and I use occupy in Dahrendorf's new sense) greater amounts of their time in informing themselves. Geography as a social science will not be left out of this trend.

Geographical education and information can service both a specialist and a general demand. It would be as well to be ready to participate. Professors in geography departments in some London universities are generally very proud that presently their graduates find jobs in business management and I think there is a pride when they say their best graduates now no longer compete for fewer teacher training places. We all have to orient ourselves to the information market. And it is there, for in a recent lecture Professor R.U. Cooke mentioned employment for himself and a number of graduates in providing specialist geological and geomorphological information to engineers and government planning agencies. Environmental lobbies and agencies are also demanding and buying expensive specialist information on for example, the impact of damming a lake on European migratory wildlife in Tunisia.

Many geographers can also be employed in the specialist interpretation of remote images. If teaching seems out for the moment, undoubtedly a demand for general geographical information is going to grow among the general public and the demand for people who will process and present to non-specialist audiences is going to reach take off point. The concept of teacher and teaching will expand with the demand. To be ready to participate in and service the demand, departments of geography education and teacher training need to restructure courses, develop new liasons (with media studies for example), and look to educational needs out of school in what is called the informal sector. Little or no attention is being given either to satisfy a demand which now exists among parents to know more about changes in subjects and education so that they could advise their children more effectively. Since this demand belongs to the formal sector it is all the more surprising it has not been recognised. The general problem in England seems to centre on lack of resources for expansion and the question of adequate pay for mountiong the courses.

Opportunities for participation in geographical information processing and a demand for such information exist. I think we have to more clearly

see the nature of opportunity and demand and prepare to participate.

The meaning of participation in the formal sector

These thoughts on participation in information processing find their place within a broad view of societal change. When I submitted my title for this symposium I was thinking on narrower fronts within the formal sector of education to which I now turn.

The first and crudest lesson planning or information processing model which I offer my students each year is a simple two step process. I say, that in planning a lesson, they first have to come to grips with the content and to organise or structure it in a logically developing fashion. They are first to grapple with content and its conceptual structure. They then in the second stage have to decide how to present the information, the content. They have to devise a plan of action which incorporates opportunities for pupils to explore the information conceptually, work with it, use it, rework it and make it their own. They engage pupils in the educational process through active, participatory methods.

Difficulties of information processing

It is quite clear that the teacher or the geographical information educator has to be a well educated geographer; it is equally clear that they have to be conscious and knowledgeable about how to process and present geographical information. It is significant that we spend three and four years becoming well educated geographers but generally we are given only one year to become information processors. Students understandably find it difficult to mediate information as distinct from conveying it. They need to begin to look at the information in a new way and to determine what information is needed for given purpose, a particular issue or problem to be explored or a topic to be unravelled. They then have to generate or find strategies for presenting the information.

Many things militate against an easy and succesful initiation into this area. The mind set the students come in with is one; their image of a teacher teaching is another; their energy and commitment are other variables; the management tasks they have to undertake often cause confusion. Was it lack of management skills or lack of presenting skills which led to difficulty of failure. The teachers in the schools do not always see this crucial distinction clearly either and students get cross currents of advice. 'Do it this way, it works for me, use my worksheet'. And so the university or college based tutor's strategies become discredited not because they won't work but because necessary management skills are in the process of being learned but failure is ascribed to the lesson plan more often than management disability. It takes the keenest, most open minded, flexible and basically confident students to participate effectively in methods of information processing for presentation in classrooms. And in my experience there is not a sufficient supply each year to provide schools with quality probationers.

Steps in information processing

A refinement of the two stage model has been elaborated in Learning through Geography into a series of steps which I have found useful over the years in helping students plan lessons and units of work or in other words process information. These are set out in Figure 1. I see these steps as incorporating vital distinctions in information processing and the educational enterprise.

I see them, also as characterising a concept of enquiry learning. Children gather or are given data and are instructed to process the data in some way so that their understanding is developed or increased. The central role of data (information) as something to be worked on, from which generalisations emerge is generally accepted.

Figure 1	Key Steps in planning enquiry based lessons
Step one:	Identify questions
Step two:	Decided what generalisations to work towards
Step three:	Gather and select appropriate data and resources
Step four:	Sort out how to present the content and use the data: What learning tasks? What learning strategies? Is there a balance and range of tasks?
Step five:	Examine the activity for likely educational objectives Accept, reject, modify the activity.
Step six:	Devise assessment and evaluation procedures
An additional step:	Is the information/data biased? Is there a balance of data?

Making purposes explicit

Some years ago, Okunrotifa reported work on the effectivenses for learning of stating objectives and releasing, as it were, those objectives to the children. When children are let in on the purposes of the work they do, they do better. Perhaps we are improving the gestalt, the view of the whole, for them. I think it could be equally important to let children in on, to let them participate more explicitly in the structure of the lesson or activity. I am now encouraging students to state to the pupils the key question or questions and to explain the way in which the activity is set up towards what end. This seems to help student confidence and give them a clearer perception of their management responsabilities also. It could also be helping pupil learning.

Participation in process

One of the generally made claims for enquiry based learning or pupil oriented information processing and associated strategies is the process it enables children to participate in. It puts them through a process of gathering or ordering data, selecting it, finding a meaning or a pattern in it and reaching a generalisation or making a decision. If the lesson is about the clearance of the equatorial rain forests and the genetic and global importance of equatorial forests along with other claims other groups or people have on it we might feel we have opened up to our pupils an environmental question with political dimensions. And in so far as we have developed their thinking skills and made them aware of conflicting interests; the stance of the interest groups; and how interests are resolved or not in a decision making process; we have also contributed to their political education many would claim and many hope the goal of good citizenship is served.

Political education and political literacy

But we need to be clearer about the sense in which we are contributing to their political education. In so far as the utilisation and destruction

of the equatorial forests is a result of political decisions, then we are informing pupils on a substantive issue and illustrating to them the role of interest groups, pressure groups and central government in decision making. Who influences, who makes and who benefits from the decisions is made as explicit as possible. No one viewpoint dominates and we can probably claim that we are showing pupils the various dimensions of the issue. It is likely too that they will see how the structure of society and its distribution of power will influence the decisions. The rights of the Indians in Amazona no matter how water tight their case in terms of human rights are unlikely to prevail against Brazilian government economic policies, for example. The concepts of interest, power and decision are all there and the appreciation of these concepts is part of political education.

The use of geographical information

A further point can be made. I understand that Henriëtte Verduin-Muller's work in information processing began through involvement in the wider community with adults who needed information to make informed decisions on planning matters for example.

This was geographical information playing its role in the political process outside the school and as such it must have contributed to the political education and political skills of the participants. The simulations and role plays, and value education strategies now available to teachers can be used to develop a parallel political literacy and classroom based political skills in children. With such strategies for information processing they are being given a change to read, analyse, clarify and interpret their own and other people's value positions, self interests and points of view.

Polititcal education and political action

There is a real difference however, between the nature of the adult participation and the use to which information is put and the classroom

participation. Obviously, the classroom work is at one remove from the real world and does not immediately affect outcomes and decisions though I acknowledge that occasionally work may be done in the field and may lead to participation in a real world decision. The aim of political education in the classroom if it is to ensure political participation is as much an uncertain goal, a hope, a desired outcome, something devoutly to be wished as the general aim associated with education for international understanding or peace studies. But if the aim of political education is to promote political literacy, a knowledge and understanding of and a perspective on the shaping of political decisions then we can be more certain that our classroom work is developing thinking skills and viewpoints which as adults people are free to use or not. If political literacy is a training in examining the evidence, the nature of the issue, the standpoints and the power and position of different groups in the issue, then we set ourselves an achievable testable goal and people in classrooms can participate in the process of becoming politically literate. It is interesting to note that general societal and peer group pressures may mean they never use that literacy in the strong sense of active political participation in society. One can learn to participate in a process designed to promote a certain kind of literacy, and develop a range of thinking and vocal skills and then decide not to use these actively. I suppose many readers of The Guardian newspaper would fall into this category. One participates intellectually but perhaps not practically. One is politically literate but not active.

The nature of political education and the forms participation can take are worth thinking about and distinguishing even if only to show some sceptics and timorous that the promotion of political literacy is not necessarity follow by political action and above all is not indoctrinary - people are exposed to as many and more viewpoints and pressures outside the classroom as in it and the classroom work does not work against a free choice. Children are left with a free choice to develop into left wing or right wing or middle spectrum individuals.

Information as problematic

I think another aspect that has become increasingly clear from the development of value exercises, role plays and so on is the kind of information being considered in the classroom. Descriptions of landscapes and regions could seem to be fairly neutral and unproblematic. Studying issues and problems brings of necessity a range of information and viewpoints into the classroom and begins to show how the information we use can itself be viewed as problematic. Whose views are being reflected? Whose interests are being served?

I link these questions to one of the present concerns in geography education- bias in materials and textbooks (especially as this relates to racism and sexism). Materials will probably always be biased in some way but to remain conscious of the probably means adding a step to our evaluation of lesson plans, for example. Not only do we need to evaluate lesson plans for aims and objectives but also for bias. Roger Robinson provided three similar but different descriptions of an Indian village, Bisena-halli recently which are very useful for discussing cultural bias and illustrating the nature of what is taught as problematic. Just two paragraphs from different descriptions are quoted here to make the point.

There are about 60 houses and 300 people here and I know them all very well. I was born here and my wife came from a nearby village when we married 15 years ago. We bought our house for the equivalent of about a year's wages (which we borrowed from the landlord), and since then I have replaced the thatched roof with granite slabs and strenthened the walls with granite pillars. It is a very sound house. We have added a separate kitchen and have no trouble with smoke in the main room.

The village pump provides water. We have no bathroom, but we all know where to go in the fields. Scavenging animals, especially pigs, clean up a lot, and the hot sun quickly sterilizes any dung left. Personal cleanlines is most important and we are glad of the good water supply.

There are about 300 people living here in 60 houses. The buildings are all singlestoried, many are roughly thatched with reeds, and most are built from sun-baked mud bricks. Some better, larger houses are of stone - granite is quarried locally. The houses have few windows, and the rooms are usually low and dark. The floors are made of cow-dung and walls are often plastered with mud or cow-dung. There is no furniture. The animals (cows, bullocks, goats, sheep) sleep in, or close to the houses.

Electricity has not reached Bisena-halli, and there is no piped water or sanitation. Human excrement is found in the fields near the village, and the use of water in the home is limited because it has to be carried from the central village pump that the government installed.

If in geography lessons as well as presumably English and History lessons we can get pupils to go beyond the information given, to use Bruner's phrase in a different sense, and to be aware of whose point of view and whose interests are being served. then participation in information processing in geography education is being achieved at two levels. To give practice in critically evaluating information on both levels is to impart to pupils a valuable skill.

Talking to learn as participation

There is one final notion of participation in information processing which I would like to touch on. The role of language in learning is appreciated in a general sense but there are few school geography departments known to me where policies matching the recommendations of the language across the curriculum research group (Martin et al) have been set up. This can probably be explained in relation to the prevailing subject centred ideology in secondary schools in England and Wales.

The language research group argues that pupils need to be given opportunities to talk through their work or write about it in a 'thinking aloud on paper' kind of way. This facilitates the tentative exploration of new ideas and thoughts, ideas can be half-uttered, half expressed along the way of clarification and the getting to grips with ideas more fully and more accurately. Writing and talking expressively as a stage on the road to writing and talking in a traditional sense i.e. the ability to pass on accurate information in an ordered sequence can be encouraged and developed by deliberately planning talking and writing tasks as a lesson proceeds. The research workers in this area advocate that talking and writing to learn is encouraged by varying the audiences for whom children write and varying the purposes for which they talk or write. The audience may be newspaper readers one time, a planning committee another, a friend or the peer group on another occasion and so on. They might be asked to write in a diary form, as a report for a magazine, as a letter to a newspaper.

The need for language policies in all subjects hinges on the distinction between the role of language in communicating and the role of language in -learning. In order for proficiency in communication to develop, it is argued that the process of talking and writing to learn must be fostered. The pupils and their talk and writing have to be reagarded as more important than the teacher's at planned interludes throughout units of work. Pupil participation in learning and communicating can be defined in terms of the interludes existing for their exploratory 'um', 'ah' talk.

Opportunities and contexts for participation

Thinking about participation in information processing leads us to identify different scales, contexts and opportunities. We can, if we wish, modify our attitudes and existing course structures to participate in an information based society where geographic information has its place; we can encourage participation at several points in lessons from (1) a revealing of the overall plan, to (2) planning enquiry, data based lessons. Some of these lessons will illustrate social and political processes and the shape of the outcomes. It follows that political literacy is developed in what can be seen as either a stronger or a weaker participatory sense. Where the additional step is taken of looking behind the information, of regarding the substance to be taught as problematic then our concept of information processing is expanded and the nature of our participation becomes more critical. Finally, in the classroom the process of learning itself can be fostered by setting up talking and writing exercises so that children are given opportunities to work through to understanding. Talking to learn is clearly a basic dimension of information processing for oneself which must take place before information as problematic of information processing for others can be developed.

References

N. Martin et al (1970) Writing and learning across the Curriculum 11-16, Ward-lock

P.O. Okunrotifa (1977) Evaluation in Geography, O.U.P.

A, Porter (ed) (1983) Teaching Political Literacy, Bedford Way Paper 16, University of London Institute of Education, Tinga Tinga Press

R. Robinson 'What is Truth', Times Educational Supplement, 17th December 1982

F. Slater (1982) Learning through Geography, Heinemann

H. Verduin-Muller (1978a) A Conceptual model for processing geographical information for education, Geographical Institute State University, Utrecht

H. Verduin-Muller with Rob van der Vaart (1978b) The Geographical Information Educationist, the why, what and who of a new profession. Geographical Institute State University, Utrecht

H. Verduin-Muller with Rob van der Vaart (1980) Experiences with a conceptual curriculum model for geography, from theses to system Geographical Institute State University, Utrecht

PROVIDING INFORMATION ON THIRD WORLD COUNTRIES FOR THE INFORMAL FIELD OF EDUCATION: NEW OPPORTUNITIES FOR REGIONAL GEOGRAPHY

International Geographical Union
25th. Congress, Paris, France

Commission on Geographical Education
Paper: Symposium, August 20 - 25th. 1984
Freiburg i. Br., Federal Republic.

Paul H.J. van den Boorn,
Royal Tropical Institute,
Amsterdam, The Netherlands

PROVIDING INFORMATION ON THIRD WORLD COUNTRIES FOR THE INFORMAL FIELD OF EDUCATION: NEW OPPORTUNITIES FOR REGIONAL GEOGRAPHY

Paul H.J. van den Boorn
Royal Tropical Institute - Mauritskade 63
1092 AD Amsterdam - The Netherlands

Introduction

Since the Second World War, but particularly since the second half of the 1960s, there has been a considerable growth in public interest in the poor countries of Africa, Asia, Latin America and Oceania, nowadays mostly referred to as the Third World. Not only did this lead to the production of a large number of scientific publications from a broad spectrum of professional disciplines and to more attention being devoted to the Third World in school curricula, but much information also became available, in the form of films, slide presentations, courses, exhibitions, pamphlets, books and educational trips, which was directed at the general public: the field of informal education.

Evaluating this flow of information, one reaches the conclusion that geography has since the Second World War lost its pre-eminent position as the source of information on the Third World countries. Other disciplines such as economics, demography, political science, non-Western sociology and history have to a greater or lesser extent taken over this role.

Following an overview of society's growing awareness over the last 35 years concerning the problems of the Third World, this paper will evaluate the role of geography as potential information source and analyse the causes of its decline in influence. The argument is illustrated by a case study: the 'Landendocumentatie' series of the Royal Tropical Institute, a series of geographical monographs dealing with Third World countries and aimed at the general public. Subsequently it is demonstrated that geography may be able to recover some of the lost ground.

Although the transformation described is based on the situation in the Netherlands, the similarity of developments in other countries may give the analysis a broader currency.

The growth of the information supply on the Third World and the role of geography

In the wake of the Depression and the Second World War which both had severely weakened the position of the colonial powers in Europe, the second half of the 1940s witnessed the beginning of a change in attitude to the countries (colonies) of Africa, Asia, Latin America and Oceania. The development of these regions was no longer viewed as merely an extension of the development of the 'motherland'. The UN Charter insisted on complete independence for all colonies, so that the inhabitants of these countries now faced the prospect of building up a modern and prosperous economy on their own. Only gradually did the world become aware of the enormous economic and material gap which had to be bridged before these countries could draw level with those in Europe and North America. The injustice inherent in this situation was acknowledged. In 1949 the US President Truman (State of Union 'Point Four'), and soon afterwards the UN, called upon the wealthy nations to support the poor, underdeveloped regions in their development effort. Presumely because the difference between rich and poor was initially perceived as a problem that might be quickly solved by the transfer of technical knowledge and capital, it was mainly economists who became involved with the problems of underdevelopment. In their work they made considerable use of the monographs on these countries written by geographers. Alongside cultural anthropologists, geographers were accounted the experts on distant lands, exotic peoples and strange cultures. This reputation sprang from a tradition dating back hundreds of years.

However, the objectives of economists in studying Third World countries were fundamentally different from the static, inventorising and descriptive approach of the geographers. What they wanted to know was:

where do the chances for change and development lie in these countries, and what are the constraints that have to be overcome? Rather than describing tropical countries and regions in the same way as one would those of Europe and North America, using the time-honoured methodologies and fixed layouts (genre-de-vie principle, Länderkunde according to Hettner's Scheme) as geographers did, development economists and the representatives of the other abovementioned disciplines who followed in their wake adopted an entirely different approach, one aimed at the special situation in those countries. As a result, the monopoly of geographical monographs in providing scientific information on 'distant lands' disappeared rapidly since the early 1950s. By the early 1960s only a handful of geographers had moved over to the new approach to studying developing countries. However those that did make the step, were such ardent converts to the cause that they more or less abstained from geography altogether and neglected to investigate the possibility of making a valuable geographical contribution to the theories developed by economists.

At this time, the information about the Third World that the general public received came almost exclusively from the teaching of geography in schools and the bulletins of various charitable institutions (e.g. the churches). In school textbooks and other non-scientific geographical works, the physical, social and economic conditions in the colonies and 'young nations' were described following the rules of traditional regional geography, the approach which still dominated in the universities. Educational geographical books were more or less direct transcriptions of scientific works using the same design (usually Hettner's scheme) and with the same contents, only at a simpler and less detailed level. In the material provided by charitable institutions, the emphasis was on the poverty aspect, as well as on the role of volunteers and missionaries. These reports on poverty, desease and hunger were, however, seldom placed within a broader regional, national or global context, and exuded Eurocentric and paternalistic attitudes. The root causes of poverty were seldom touched on. The media provided

information on a irregular basis, usually as a result of specific political events (such as the many independence celebrations around 1960), or called attention to particular customs and usages, with emphasis on the exotic and the unusual. Nevertheless, the demand for information about the Third World was clearly showing a gradual increase, as indicated inter alia by the growing number of publications on the subject.

When it became evident towards the end of the 1950s that the gap between the rich and the poor countries was not going to be closed by the transfer of knowledge and capital, but that a much greater effort would be needed, the UN proclaimed the First Development Decade. In this context the governments of the rich nations were urged to motivate their populations towards providing a greater, more comprehensive contribution to help the people of developing countries improve their living standards. Creating an awareness of the situation in the Third World seemed a logical first step towards achieving this end. Many pressure groups responded to the UN's call and began to occupy themselves with Third World problems, generating great enthusiam and optimism in large sections of the population, who believed that the gap between rich and poor would now begin to close. The first UNCTAD conference in 1964 and the Year of International Cooperation in 1965 provided a further stimulus. Indicators of these developments in the Netherlands include the accession of the first minister for Development Cooperation, the setting up of the Development Cooperation Information Service in 1967 and the creation of a wide range of pressure groups during the years 1966-1970. From 1965 onwards the Dutch public was inundated with a welter of information about the Third World and the development question.

It is during these years that geography missed the boat as regards the provision of information on the Third World; in fact, this was inevitable under the circumstances. Three reasons for this state of affairs can be identified:

1) Until the mid-1960s, geographers paid little or no attention to

development problems (see for instance Lacoste, 1965). In the Netherlands, departments within faculties of geography at universities dealing specifically with developing countries only began to appear towards the end of the 1960s. There was virtually no relevant geographical literature which gave the problem of underdevelopment a central place. Major theories of underdevelopment all came from non-geographical sources (Galtung, Rostov, Frank, and others). The primary documentary sources used for compiling instructional and information material now hailed from the disciplines of economics, non-Western sociology, political science and demography.

2) Regional, descriptive geography - until then the primary source used by geographers working in the field of education for the content and structure of their material - found itself in a deepening crisis because the old methods of Länderkunde or the genre de vie principle no longer yielded worthwhile results at a time when dynamics and change, as well as the worldwide trend of increasing integration of countries and regions, caused static, isolated description to lose its value. Regional geography at the university level underwent a massive decline.

3) Geographers working in the field of education, confronted with the need for a new approach to studying Third World countries, had no methods, models or examples from their own field to fall back on, at the hand of which they might redesign their material. The absence of a geography for education carrying out research into this subject, which might have given a timely warning of society's new demands, became painfully obvious. At a time when the supply of information - including geographical information - was beginning to play an increasingly central role in society, there was a clear need to set up such an area of research.

Under the protection of institutionalised teaching a period of trial-and-error set in, during which the contents of school textbooks were gradually adapted. This process only reached completion in the second half of the 1970s, in the sense that, when handling Third World coun-

tries, the new development-oriented approach had now totally displaced the old regional geographical one. The new information stream aimed at the general public made scarce reference to geography: economic, sociological and especially historico-political information now held almost complete sway.

A case study: the Landendocumentatie series

The process described above can be illustrated by the transition undergone during the period in question by one of the very few sources of geographical information in the Netherlands on developing countries: the 'Landendocumentatie' series, a geographical series dealing with tropical and subtropical countries, published by the Royal Tropical Institute, Amsterdam. The series came into being in 1958 when the decolonisation process was in full swing and the demand for information about the 'young nations' was growing. In the introductory letter accompanying the inaugural issue, which was sent to teachers and the press, it was announced that: "The sweeping changes taking place in the areas of social, economic and political life in tropical and subtropical regions make it virtually impossible for the geography teacher and the interested layman to keep up to date.....We have deliberately avoided producing scientific geographical monographs, because these would necessitate a further study. Instead we have opted for a limited number of subjects accompanied by a list of references for further study."

The books which subsequently began to appear on a fairly regular basis had the same sort of design and contents as scientific publications, only in rather less detail. They were imbued with the descriptive character of scientific regional geography. Hettner's Scheme acted as a structuring framework for the contents. At least until 1965, the books were written from a marked colonial, Eurocentric viewpoint with undue emphasis being placed on aspects of European concern, such as an almost exclusive coverage of colonial history and contacts with the motherlands, and extensive descriptions of export crops and trade

links with Europe. Little or no attention was paid to the cultivation of food crops and facets of the native culture. Unfavourable comparisions were made between modern Western culture and primitive native ones, for instance: "The kings of these principalities ruled with barbaric despotism" (concerning the coastal kingdoms of Dahomey, in a publication from 1963); or: "The Coptic Church in Egypt is bogged down in ancient rituals" (the only remark on this church in a publication from 1958).

After 1965 a change became evident. Eurocentrism disappeared and such concepts as 'development cooperation' and'underdeveiopment' began to show up more and more frequently in the text, a sign of growing awareness of the special status of most tropical and subtropical countries. However, developments in other disciplines during the second half of the 1960s, directly relevant to the provision of information on the Third World, did not lead the editors to wonder whether the contents of a geographical publication about a developing country should be arranged according to principles differing from those used to describe a European and North American country. Hettner's Scheme, with its set sequence of subjects, was retained as the ordering principle, although from 1965 onwards a small paragraph headed 'development cooperation' was added on at the end of each book. In this the editors were by no means alone: virtually all geographies from this period still followed the tried and trusted procedures. In all honesty it should be stated that there really did not seem to be any need to change the design. Because of the enormous increase in interest in the Third World, the demand for 'Landendocumentatie' also grew apace. It was especially in the early 1970s that the number of subscribers to the series rose sharply (to a printing run of $\pm$ 4000 around 1980). Relatively speaking, however, the series lost ground: from one of the only information sources outside the charitable bulletins, aimed at the broad public, it became one amongst many informative series in the 1970s. (Some of these are mentioned in the references.) However, in the light of the continually growing outflow of scientific

publications and the call for ever better and more detailed information from the general public, change was inevitable. 1973 saw the first departure from Hettner's Scheme, when a book on Jordan was chosen for a regional approach whereby the economic situation and development potential were analysed by region. Even more significantly, from 1974 onwards the problem of development began to form the main theme of each book. National economy was now handled from the viewpoint of its relationship with the world economy, development policy and projects were covered extensively, and the problems of the urban and rural environments received special attention. Description made way for analysis from a specific perspective.

All this was only a gradual, trial-and-error process, however, which continued up until the 1980s. It should be made clear that the contents of many of the books ultimately constitutes a compromise between the old approach of descriptive regional geography and the new approach which developing countries require. The desire to provide the reader with as much geographical information as possible frequently clashes with the aim of analysing the development problems of a particular country. For instance, the purely descriptive aspect is largely retained under the heading physical environment, which has caused this part of the books to become progressively more isolated from the rest of the contents. Chapters describing the agricultural, industrial and service sectors also remain strongly descriptive. In contrast, chapters dealing with history, population and economy are generally written from the development viewpoint. The failure to make clear choice for the new approach has led to problems with placing certain subjects on which 'one also wishes to say a few words'. Examples are education, health care, infrastructure and outlines of the often modest industrial and modern tertiary activities. Often the books lack a concluding chapter in which the various aspects of the country described are summarised and its development prospects indicated. This information is generally to be found in the concluding paragraph to the chapter on economy, somewhere in the middle of the text.

By all indications, the design of a modern country monography presents considerable problems. Providing a rounded geographical picture of a developing country from a development viewpoint would appear to be an alomost impossible task.

New opportunities for (regional) geography in the provision of information about the Third World

I am firmly convinced that new opportunities have arisen since the end of the 1970s for geography to play a role in providing information on the Third World, not only in the field of geography education as such, but also in the sence of a modern regional geographical approach. These new opportunities have been created by developments in three areas, i.e. a growing demand for geographical information among the general public, a growing appreciation within the scientific community of the geographical components of the development question and thirdly the recent availability of results of research in the field of geography for education.

Public demand for (regional) geographical information has grown considerably over the past four to five years. In response, at least three new 'country series' besides 'Landendocumentatie' have appeared catering to the relatively small Dutch or Flemish-speaking population. This growing interest can in part be explained by the fact that more and more people are becoming acquainted at first hand with the Third World, as tourists, development workers, business travelers or conference delegates. Contacts with cultural minorities in one's own country also plays a role, so new target groups for geographical information have come into existence.

Another portion of the growing interest comes from people directly concerned with development problems, that group which 15 years ago turned its back on geographical information. In my opinion, this renewal of interest can be clarified as follows. Opinion polls towards the end of the 1970s brought to light a decreasing interest in the Third World and its problems. This appeared to be the result not only

of a certain 'information overload' coupled with increasing concern about developments within our own society (unemployment, etc.), but also of the excessive emphasis placed on the political aspects of the development question in much of the informative material. This repelled many otherwise interested parties. Pressure groups seemed increasingly to be 'preaching to the converted'. The government which provides financial support for many of these activities, issued a call for more politically neutral socio-economic and geographical information, which would (re)awaken interest in the Third World among more sections of the public. For instance, culture and natural environment were seen as subjects with mass appeal through which interest in the development question could be stimulated.

These considerations have provided new opportunities for geographers, who specialise in bringing together diverse natural, social, historical and economic facets of a society to present a harmonious picture. Geographers active in the field of informal education have an additional important advantage, in that the general public most readily assimilates information on the Third World at the national level, which many find the most easily recognisable (although even this level is in some cases too specific, so that it is necessary to write in terms of big natural regions or continents). If one wishes to reach large sections of the population, then frequent reference has to be made to this natural context even if a special non-spatial defined theme is being considered and even if this is not the most logical approach from a scientific viewpoint.

In the second place new opportunities for (regional) geographers are emerging from the scientific quarter. Here there is a growing appreciation of the geographical components of the development question, not least as the result of the research efforts of development geographers since the creation of their specialisation. Thus there is an increasing awareness of the differences between the Third World countries themselves: the Third World can no longer be treated as a unit. There is now - also among representatives of other disciplines -

a growing realisation of the immense differences in development potential between large countries like India, China and Brazil on the one hand and ministates such as The Gambia, Belize and The Maldives on the other. Differences in levels of development are also becoming increasingly apparent: at the one extreme there are the Newly Industrialising Countries, at the other the low-income nations. Then there are countries with special characteristics such as the oil-producing states, land-locked countries and small-island states. The constraining/stimulating role which culture and/or natural environment play in the development process is (again) increasingly being recognised, and these factors may also be used to define regions (such as the Sahel countries or the Arab World). The large differences which often exist in the physical-geographical, cultural, socio-economic and communications areas within a country's borders are also receiving more attention. Finally there is a growing awareness of the destruction of the natural environment which is progressing at an alarming pace in the Third World.A special preserve of geographers, the relationship between man and his environment, here forms the central theme.

The third factor, the availability of the results of research in the field of education geography, is of prime importance if there is to be an adequate and timely response to the above two developments. Research in the field of education geography was initiated in the early 1970s when a number of geographers, themselves active in teaching or professional training, realised that a new era of information provision was at hand (the post-industrial, information society), and that geography should take part in this development. The task of making accessible the continually growing body of scientific knowledge via an ever-widening range of information carriers (books, pamphlets, films, slide presentations, computer programmes, excursions, etc.), not only for teaching purposes (formal education) but also for the new fields of non-formal and informal education, could no longer be left exclusively to geographers actively occupied with teaching. They

simply do not have the time. Moreover, it was recognised that the conceptualisation of educational geographical information required more than merely the transcription and simplification of scientific sources. We have already seen that the inability of geographers to adopt to society's needs had as consequence that geography had almost no part in the provision of information on the Third World according to the new development-oriented approach.
The situation has now changed. 1973 saw the setting up of the new study 'Geography for Education' at the Geography Department of the State University of Utrecht, which was to occupy itself with research into the subject described above.One resuit of this was the publication in 1978 of the Conceptual Curriculum Model for Geography, which acts as a key according to which geographical information products aimed at different target groups can be designed. Scientific, social and target group-specific programmes of requirements and objectives ensure the placement of the central themes/contents in a particular relationship to each other (the 'concepts structure'), and therefore determine the structure of the information product.

Modern country studies designed according to education geographical principles

Since 1981 I have written some numbers of the 'Landendocumentatie' series using the Conceptual Curriculum Model for Geography. At the same time a number of other authors working on the series were encouraged to adhere to the principles of the model.
Before beginning on a description of a country, a good deal of thought was devoted to the following considerations: what place does the country occupy in the world today and to which class of developing countries does it belong; which specific development problems determine the actual course of affairs in the country; what special relationships do the Netherlands and Belgium have with the country; for which target groups in the Netherlands and Belgium is the country of special significance. At the hand of these questions a number of basic

concepts (themes) are selected around which the contents of the book are ordered. By strictly complying with this procedure, it was not difficult to establish priorities for the contents of the books concerned or to distinguish between major and minor issues. It also became easy to decide on the angle from which to write a chapter on, for instance,physical environment (as constraint to the development of agriculture or human settlement, as a tourist attraction, as an obstacle to communications, etc.). In a regional geography written in such a manner, the predetermined concepts and objectives serve as guidelines along which the contributions of various aspects of a society to development of a country can be evaluated, which in practice works quickly and efficiently. It becomes possible to narrow the study of scientific sources down, as only those with contents relevant to the chosen points of departure need to be considered; the others can be laid aside. I would like to cite two examples here.

The point of departure selected for a number on the Sahel countries was the difficult physical environment within which the development of these countries has to take place, which development will in the near future nevertheless have to be based on agriculture. It was apparent, however, that historical, cultural and agrotechnical factors had also played a part in bringing about the present situation.. Environment, history, cultural diversity and agricultural practices were therefore chosen as the central concepts around which the contents were grouped, and at the hand of this design an answer was sought to the question: what is the development outlook for the Sahel? The famine at the beginning of the 1970s was picked as a focus for the attention of the target group. Because of the chosen points of departure, such matters as current political situation and development of the industrial and service sectors were dealt with only briefly. It was assumed throughout that development workers and students formed the most important target groups: the Sahel countries receive a relatively large amount of development aid, and the situation in the Sahel can be viewed as epitomising the alarming trend in food crop

production elsewhere in Africa.

By way of contrast, in a number on South Korea, one of the Newly Industrialising Countries, it is industrial development and its cultural-historical and geographical background which formed the core of the work. The underlying objective here was to examine the extent to which South Korea could serve as a model for other Third World countries. The political situation in the Korean Peninsula was also seen as an important factor. It was expected that the potential readers would be in the main business travellers, tourists (Olympic Games in 1988) and adoptive parents of Korean children, as well as students interested in the situation in the 'NICs'. The physical environment was therefore handled from the viewpoint: what does a visitor to the country actually see? A second perspective was: what influence does the physical environment exert on agriculture and population distribution?

Concluding remarks

Geographers need to be aware of the great possibilities which exist for (regional) geography in the field of providing information on development problems. There is a growing appreciation of the value of the geographical approach. I feel that the crucial role played in this process by Geography for Education, as intermediary between the scientific profession and the users of geographical information products, has been amply demonstrated. Only when a group of geographers undertakes to occupy itself full-time with studying and publicising the educational potential of geography in the information age, will it be possible to avoid a situation in which geography once again misses opportunities, as was the case with the developing countries and their problems, and which in the long term could put geography in danger of disappearing as a separate discipline altogether.

References

BLONK, A., BRUMMELKAMP, J. en FAHRENFORT, J.J., Capita Selecta uit de volkenkunde, Groningen, 1965.
BOORN, P.H.J. VAN DEN, 200 Jaar Arbeidsmarkt in Utrecht, evaluatie van een geografische informatie-eenheid; paper Nederlandse Geografendagen 1980, Universiteit van Amsterdam.
BOORN, P.H.J. VAN DEN, en M.P. VAN DIJK (ed.), De Sahel na de grote droogte, Landendocumentatie 1982 2/3, Amsterdam, 1982.
BOORN, P.H.J. VAN DEN, Zuid-Korea, Landendocumentatie 1983 2, Amsterdam, 1983.
EPOS (EDUCATIEF PROJECT ONTWIKKELINGSAMENWERKING), Kaderstuk Ontwikkelingseducatie, SLO, Enschede, 1983.
ENGELHARD, K., Entwicklungsländer, Unterrichtsthema im Spannungsfeld von Ideologie und Realitätsbezug, in: Geographische Rundschau 35(1983)7.
HICKS, D., Development Education, in: Huckle, J. (ed.), Geographical education reflection and action, Oxford University Press, 1983.
HINDERINK, J., Enige gedachten over de geografie en de Derde Wereldproblematiek, in: Geografisch Tijdschrift, 1976 1.
HINDERINK, J., Geografie en onderontwikkeling, in: Hinderink, J. en Smidt, M. de (ed.), Een sociaal-geografisch spectrum (1969-1973), Utrecht, 1974.
KLEINPENNING, J.M.G., Profiel van de Derde Wereld, Assen, 1978.
KLEINPENNING, J.M.G., Driemaal Derde Wereld, Assen, 1980.
KLIEST, T.J., Over de veelsoortigheid der Tropisch Afrikaanse economieën, Utrecht, 1979.
KONINKLIJK INSTITUUT VOOR DE TROPEN, De serie Landendocumentatie (1958 - 1983), Amsterdam.
LACOSTE, Y., Les Pays sous-développés, Que sais-je No. 853, Paris, 1963.
LACOSTE, Y., Géographie du sous-développement, Paris, 1965.
NOVIB, Landenmappen (1976 - 1983), Den Haag.
PICAVET, R.Ch.M.Th., en PRONK, J.P., Literatuurlijst Ontwikkelingssamenwerking 1967-1969.
UNCTAD, Viability of small island states, No. TD/B/950, Genève, 1983.
VOORLICHTINGSDIENST ONTWIKKELINGSSAMENWERKING (VDO), (Aspecten van) Internationale Samenwerking, scientific series, 1968 - 1983, Den Haag.
VOORLICHTINGSDIENST ONTWIKKELINGSSAMENWERKING, Internationale Samenwerking, fortnight series for the general public, 1969 - 1983, Den Haag.
VERDUIN-MULLER, H.S. en VAART, R. VAN DER, Experiences with a Conceptual Curriculum Model for Geography, from thesis to system, Paper 24th Congress IGU, Japan, 1980.
VERDUIN-MULLER, H.S., Konzeptionsmodell für die Curriculumplanung in der Geographie und die Realisation geographischer Informationseinheiten, in: Curriculumarbeit in Europäischen Staten, Der Erdkundeunterricht, Heft 37, Stuttgart, 1981.

TELE-BLACKBOARD

INTERNATIONAL COUNCIL FOR EDUCATIONAL MEDIA (ICEM)
TUNIS, TUNESIA,
MAY 29th / 31st 1972

Henriëtte Verduin-Muller
State University, Utrecht
Utrecht, The Netherlands

PEDAGOGIC-DIDACTIC INSTITUTE FOR TEACHER EDUCATION,
STATE UNIVERSITY OF UTRECHT, UTRECHT, THE NETHERLANDS

International Conference of the "International Council for Educational Media", Tunis, May 29th / 31th, 1972.

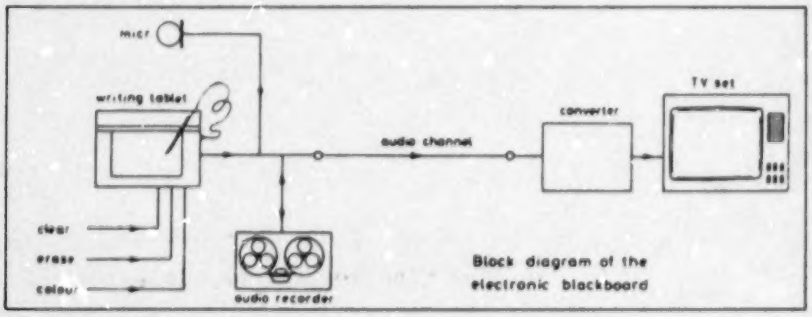
General theme:"the contribution of new media to education in developing countries"

Paper by: Mrs. Dr. Henriëtte Verduin-Muller

TELE-BLACKBOARD

Short description

The tele-blackboard or electronic blackboard is an audio-visual system for instructional objectives. It is developed by the Technical University, Delft, (The Netherlands) in co-operation with the Technical University, Bandung, (Indonesia) illustrating the inter-university co-operation between the Netherlands and Indonesia. This system may promote, it is to be hoped, a rapid introduction of fundamental education, notwithstanding the big shortage on qualified teachers.



Block diagram of the electronic blackboard

The core of the tele-blackboard is a tableau on which is put a normal piece of paper. The paper is written and sketched upon with a pencil which goes with the tableau. The visual information of the tableau is transformed into narrow-banded signals, so narrow banded that they are sent simultaneously with the verbal explanation, the spoken word, by a normal long wave radio-transmitter. Visual and verbal information are thus transmitted across long distances at very low cost. The signals are received by a normal radio-receiver e.g. a transistor. A television receiver is also required at the reception point and apparatus to take out the visual signals hidden between the audio-signals and to transfer them into visual information suited to a television set. It is possible to connect this de-coder with a number of tv sets connected in parallel.

Media-didactic potentialities of the tele-blackboard

The tele-blackboard is an audio-visual medium which one at first imagines is a combined blackboard and television. But on some reflection the tele-blackboard does not line up with the media-facts. Thus in order to determine the potentialities we have to get away from the well-known media: blackboard and television. Thus the question arises: what kind of information does it communicate and what kind of information does it not communicate, and what are the corresponding didactic-implications.
The information communicated by the tele-blackboard can be in:

. the spoken word,
. the written word,
. particular visual images: pictures true to structure, models, outlines, diagrams and such like.

The way of information-presentation via the tele-blackboard is a special one: the written symbols and the visual images come into being respectively - they are build up before the eyes of the pupils. A total image cannot be given all at once. Thus we always have to do with a "growing-text", a "growing-model". If the tele-blackboard teacher has filled the paper on the tableau he can wipe the tableau by pulling over a switch. He then takes a new sheet of paper and continues his explanation. Errors in letters and lines are to be erased by simply tracing over superficially with the pen (again in combination with a switch). This correcting possibility is of far-reaching didactic potentiality. Because the erasing possibility implies that the build-on word and image also can be broken down, then afterwards the tele-blackboard teacher can build up again text and model possible in variation e.g. not line A ⟶ B, but line A⟶ C.
In consequence of the visible and experienced growth to the final-phase and the potentiability of building up and breaking down of the sub-subject-matter , the insight-learning is essentially stimulated and the simple learning-by-heart of facts and processes discountered.

The tele-blackboard medium doest not communicate pictures true-to-nature, the so-called half-tones, those images we are used to seeing on television. No doubt this is a disadvant age in the transmission of information in the teaching-learning process. We need nog go into the significance of pictures in learning now, sufficiant is to say that pictures replace reality to a certain degree. However the fact that we cannot show true-to-nature pictures is more than compensated by the above media-potentialities and by the low cost.
Besides that we have to consider the following points.

. In the teaching-learning process the picture as such is not necessarily as important as the structure or content of the picture, and this structure can be sketched on the tableau, while the spoken word takes charge of the verbal coverage.
. The tele-blackboard teacher does not run the risk of becoming involved in the entertainment domain of the picture-television.
. The tele-blackboard teacher is compelled to visualize his subject-matter to an optimum. If he does not succeed he cannot run to the help of the picture.
. The tele-blackboard does not need expensive ready-made software.

Research findings thus far

The research done thus far are pilot studies. These studies served the objective to test the media-didactic potentialities of the tele-blackboard. A great number of short experiments, about 50, I hope will be done in autumn of this year at a comprehensive school near Utrecht. In these experiments the tele-blackboard is used as a full teaching-tool in the teaching-learning process. The findings of the pilot studies, however, are here presented.

. In consequence of the relatively small surface of the tableau and the time needed by the inter-change of the filled paper, the teaching is to be given in short successive phases. This phasing compels the teacher tp prepare his lessons thoroughly.

. The paper for the tableau can be prepared prior to presentation (I will show you at the end of this talk some examples of this).
Such preparation has the advantage that during the broadcast of the lesson the lines, letters, etc. can be traced so that they conform exactly to the prepared paper. Thus during the broadcast the tele-blackboard teacher can concentrate on a dynamic presentation of the structure visible to him but still hidden from the pupils. Relaxed he can trace the written words and visual images.

. The system has for the tele-blackboard teacher the advantage that he cannot be seen, not even his hand in writing and sketching. Thus the tele-blackboard teacher feels free; he is much less tensed than by teaching on television.
Being invisible has the further advantage for the tele-blackboard teacher that during the broadcast he has the constant opportunity to glance over his lesson-scheme. The pilot studies clearly showed that in combination with the preparation of his papers for the tableau the tele-blackboard teacher is confident about the succesful end of his performance.

. The tele-blackboard teacher has also to study thoroughly media-didactics; at the same time he has to train himself in becoming technically skilled in the use of the tele-blackboard.

. The tele-blackboard is a very direct teaching-tool. It requires a high concentration of the pupils. During the pilot studies it was very obvious that the children essentially engaged do take part in the thinking and doing of the tele-blackboard teacher. Probably this is caused (besides the totally different teaching-situation) by the proceeding of the movement at the tele-blackboard in combination with the spoken word. Thus the broadcastings will be short, perhaps 15 to 20 minutes maximum. The above-mentioned necessity for a very careful phasing (ordering) of the theme material is of great didactic gain.

. The tele-blackboard is by its nature a'contact-poor' medium. This is caused by the absence of the image true-to-nature, the so called half-tone: the visible teacher at the tvrscreen. On the other hand the absence of the teacher at the screer has the advantage that between the person training the subject-matter with the children per exempel

an assistant teacher and the children there is no third person. A lesson via the tele-blackboard is, so to say, a document "handed" to pupil and assistant teacher.

The application of the tele-blackboard

The tele-blackboard was constructed for the developing world, especially for Indonesia. To this background I want to make here some remarks in relation to the media-didactic potentialities of the tele-blackboard and to the educational research findings in the developing world ').

- The tele-blackboard gives the opportunity to develop original and very modern forms of fundamental education. (Of course the medium can also be used for the presentation of information for all kind of objectives.
- In bi-lingual Indonesia (± 150 languages)the Bahasa Indonesia is the official language. This language now is to be taught and at the same time is the one in which the different subjects are to be taught. Loss of information in the teaching/learning process will be unavoidable. By use of the tele-blackboard as note-pad and above all as a medium for vizualisation of concepts and processes (with the potentiality to gradual building up and breaking down) in combination with the necessary phasing which can lead to the smallest learning-steps, it is possible to reduce the loss of information and in consequence reduce the difficulties for the pupil.
- Optimal media-didactic use of the tele-blackboard is dynamic to a high degree. Thus it is pre-eminently suited not only to learn to see, to distinguish and to name "things", but especially to learn to compare and to order, to learn to see relations, to learn to see cause and effect, to distinguish the static from the dynamic, and thus to create the potentialities for the development of thinking. The forming of these attitudes is a basic condition to understanding the functioning of subject-matter as such.

The preparation of the lessons at the broadsasting site and the assimilation at the reception site, has the following advantages.

- The lessons are good, given by good teachers; lessons for a big audience are worth while(research MPATI).
- It is possible to develop uniform assimilation-material (low cost factor).
- Reflection on and study of the educational media and of the media-didactics; the tele-blackboard encourages this kind of pedagogic-didactic work.
- Fundamental education will get a pedagogic-didactic deepening.
- Educational research is promoted.
- The training of teachers will be stimulated.
- The assistant teachers at the reception site get in-service training especially owing to the"good" lessons. This in-service training has relevance to the subject-content, to the pedagogic-didactic education and to the forming of attitudes.

In a territory so vast as Indonesia there are to be solved also a big number of logistic problems as to the introduction of fundamental education. It is the intention to realize in Djakarta an experimental set-up of the tele-blackboard this autumn. May this experimental set-up be the start of a development leading to the introduction of fundamental education for everybody.

')-Das Problem der Alphabetisierung in Entwicklungsländer unter besonderer Berücksichtigung des Weltprogramms der UNESCO, Forschungsstelle für Entwicklungshilfe an der Universität des Saarlandes, Stuttgart, 1965.
-The New media, memo to educational planners, Paris,UNESCO/IIEP,1967.
-New educational media in action, case studies for planners,Vols. I-III, Paris, UNESCO/IIEP, 1967.
-Onderwijsproblemen in ontwikkelingslanden (symposium Amsterdam 1968), Groningen, 1968.